Floor Heating System

MultiPex® Pipe System

Alu-LaserPlus® Pipe System

SnowFlex® Pipe System

Tank System

Solar Heating System

Additional Products

Roth catalogue

Products and
installation manuals

Roth Nordic HQ

CEO
Roth Nordic

Morten Voss

morten.voss@roth-nordic.com
Phone direct: +45 47 33 97 16
Mobile: +45 21 25 63 62
roth-nordic.com

Managing Director
Denmark

Per Kronil

per.kronil@roth-nordic.com
Phone direct: +45 47 33 97 01
Mobile: +45 24 76 46 48
roth-nordic.dk

Managing Director
Norway

Morten Øren

morten.oeren@roth-nordic.no
Phone direct: +47 67 57 54 02
Mobile: +47 90 98 24 05
roth-nordic.no

Managing Director
Sweden & Finland

Jonas Holmström

jonas.holmstrom@roth-nordic.fi
Phone direct: +358 245 806 33
Mobile: +358 400 344 572
roth-nordic.fi

Content Page

A broad range of complete systems **4 - 5**

Systems and solutions **6 - 13**

Roth Pipe Overview **14 - 15**

Roth Floor Heating System
Product Range **16 - 49**
Planning and Project Design **50 - 115**

Roth MultiPex® Pipe System
Product Range **116 - 132**
Planning and Project Design **133 - 165**

Roth Alu-LaserPlus® Pipe System
Product Range **166 - 177**
Planning and Project Design **178 - 195**

Roth SnowFlex® Pipe System
Product Range **196 - 199**
Planning and Project Design **200 - 207**

Roth Tank System
Product Range **208 - 209**
Installation, operation and maintenance **210 - 213**

Roth Rainwater
Product Range **214 - 219**
System solutions for pros **220 - 231**

Roth Solar Heating System
Product range **232 - 247**
Installation, operation and maintenance **248 - 269**

Vortex Domestic Water Pumps **270 - 271**

Addresses and phone numbers **272**

Roth Nordic – a Wide Product Ra

Roth Nordic develops, produces, and markets complete HVAC systems tailored to the Danish market. Sales take place through HVAC wholesalers that warehouse the products and ensure efficient distribution. We are a nationwide organisation offering complete systems with qualified technical support within the following areas: floor heating; pipe systems for heating, cooling, and domestic water systems; snow melting systems; tank systems; and solar heating systems. Data calculations and CAD drawings are available for floor heating systems.

nge with complete systems

1 Floor Heating System
Roth Floor Heating Systems have the advantage that they can be installed in all types of constructions, be they concrete, wood structures, or as floating floors. We offer several different board systems that ensure a low height of construction, making the fast-regulating, among other things. 17 mm Roth ClimaComfort, 14 or 24 mm Roth Compact System, 22 mm Roth Chipboard System, as well as various heat distribution plates. Please refer to the descriptions in the floor heating section.

2 Solar Heating System
Take advantage of the sun to heat up your domestic water and as a supplement for space heating.

3 MultiPex® Pipe System
Complete pipe-in-pipe system for heating, cooling, and domestic water systems.

Alu-LaserPlus® Pipe System
Complete 1663 mm pipe system with PressCheck fittings. Approved for heating, cooling, and domestic water systems.

4 DVT Oil Tanks
The simple and safe way to install oil tanks. Available in 3 sizes: 620, 1000, and 1500 litres.

5 Storage tanks
Tanks for storing water and other liquids.

8 Mini water treatment systems
Available in many sizes and with different water treatment functions

7 Rainwater Systems
Complete system for gathering and recycling rainwater. Re-use the rainwater for flushing toilets and doing laundry.

6 SnowFlex® Pipe System
Complete snow melting system that keeps outdoor areas free from snow and ice.

Roth Floor Heating System
– the consumers of the future want greater comfort

Through intensive, targeted product development, Roth Nordic A/S constantly seeks to meet both professional requirements and standards as well as the consumers' desires and needs for floor heating systems that use the latest technology for the homes of the future.

Water-based floor heating is today's heating system – bar none. ROTH Nordic has been working with floor heating for more than 30 years. Our theoretical and hands-on knowledge and professional pride enable us to recommend floor heating for all types of building, both new construction and renovation, and we offer solutions for all types of floor structures.

Greater comfort and improved temperature control

Thanks to innovative investment on increased product development, in recent years Roth Nordic A/S has managed to produce a series of new components that provide greater comfort as well as improved temperature control. At the same time, the cutting edge technology and modern design make them highly attractive in the Danish home.
Roth's water-based floor heating systems are adapted to both the architect's desire for the lowest possible height of construction as well as the standard requirement for faster and better temperature control. With the new heat distribution systems such as Roth Clima Comfort® and Roth Compact®, we are able to achieve an overall height as low as 17 and 14 mm, respectively.

Free choice of energy source.

A ROTH floor heating system can be connected to all types of energy sources. It is comforting to know that if you change the energy source in the future, the floor heating system remains the same.

High tech floor heating

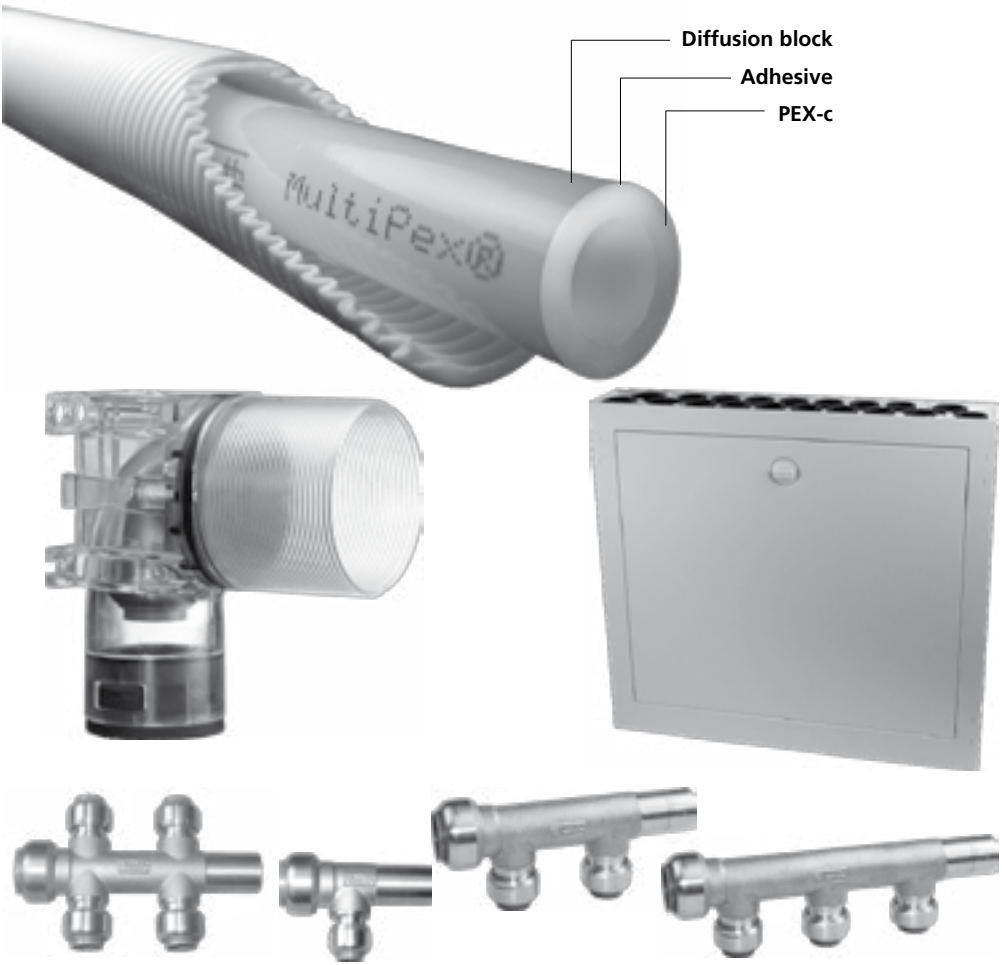
With the recent development and introduction of NOVA+, Roth Nordic A/S has taken a giant leap ahead. This new two-way system uses the newest technology with components crafted in a modern, timeless design.

Increased demand for low-built floor heating systems

An increased market for plate systems has created an increased demand for systems with a low overall height. The development of our low-build systems has made it possible
to solve many different tasks. For example, COMPACT® makes it possible to get as low as 14 mm and still provide efficient, high heat distribution with great comfort.

Roth MultiPex® Pipe System – modern installation technique for water and heating systems

Roth MultiPex® is an electron beam crosslinked polyethylene pipe with oxygen stop for heating, cooling, and domestic water systems. The system is based on a PEX-c pipe in the well-known standard dimensions of 12 x 2.0 mm, 15 x 2.5 mm, 18 x 2.5 mm, 22 x 3.0 mm, 28 x 4.0 mm, and 32 x 4.4 mm.
Max. operating temperature: 95°C (203° F.)
Max. operating pressure: 10 bar (145 PSI)
VA (Water and Drainage) approval: 1.14/ 18077

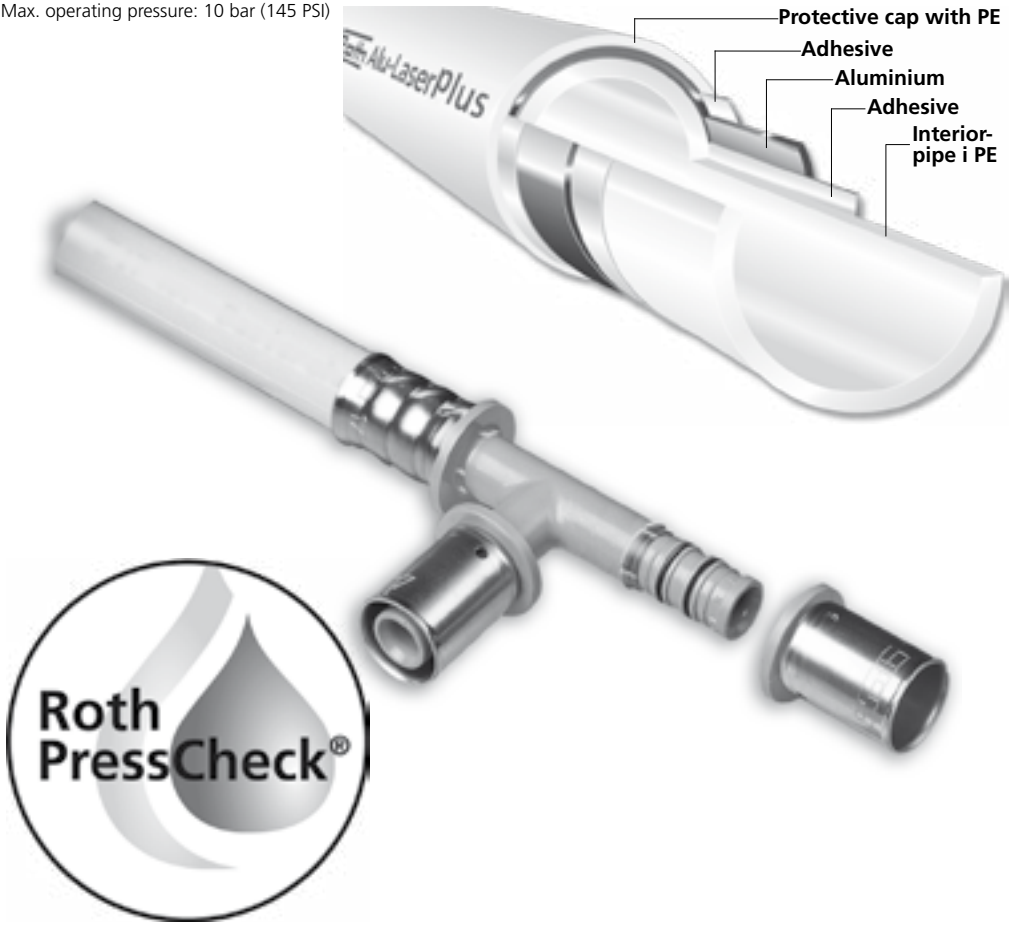


The Roth QuickBox™ coupling canister for walls and drywall can be used for 12 mm as well as 15 and 18 mm PEX pipes with 20, 25, or 28 mm casing pipes. The coupling canister is manufactured from transparent, solid cast plastic with a pre-installed brass elbow and a pressure test plug, as well as a rubber seal between the coupling canister and the casing pipe, which is approved pursuant to NT VVS 129 and fulfils the requirements of the SBI 200 guidelines.

The QuickBox™ is available as either a single or dual canister with a TT plunge coupling for 12, 15, or 18 mm. The TT plunge coupling ensures a fast and secure assembly

Roth Alu-LaserPlus® Pipe System
– modern installation technique for water and heating systems

The Roth Alu-LaserPlus® pipe system is cutting edge in the field of installation technique. Based on the increasing requirements for modern systems, Roth has developed this new system based on the best cutting edge material and assembly techniques. The system is based on an Alu-LaserPlus™ pipe, a 5-layer pipe that combines the best characteristics of the PE pipe with those of the metal pipes.
VA (Water & Drainage) approval no: 1.14/ 17244
Max. operating temperature: 70° (158° F.)
Max. operating pressure: 10 bar (145 PSI)

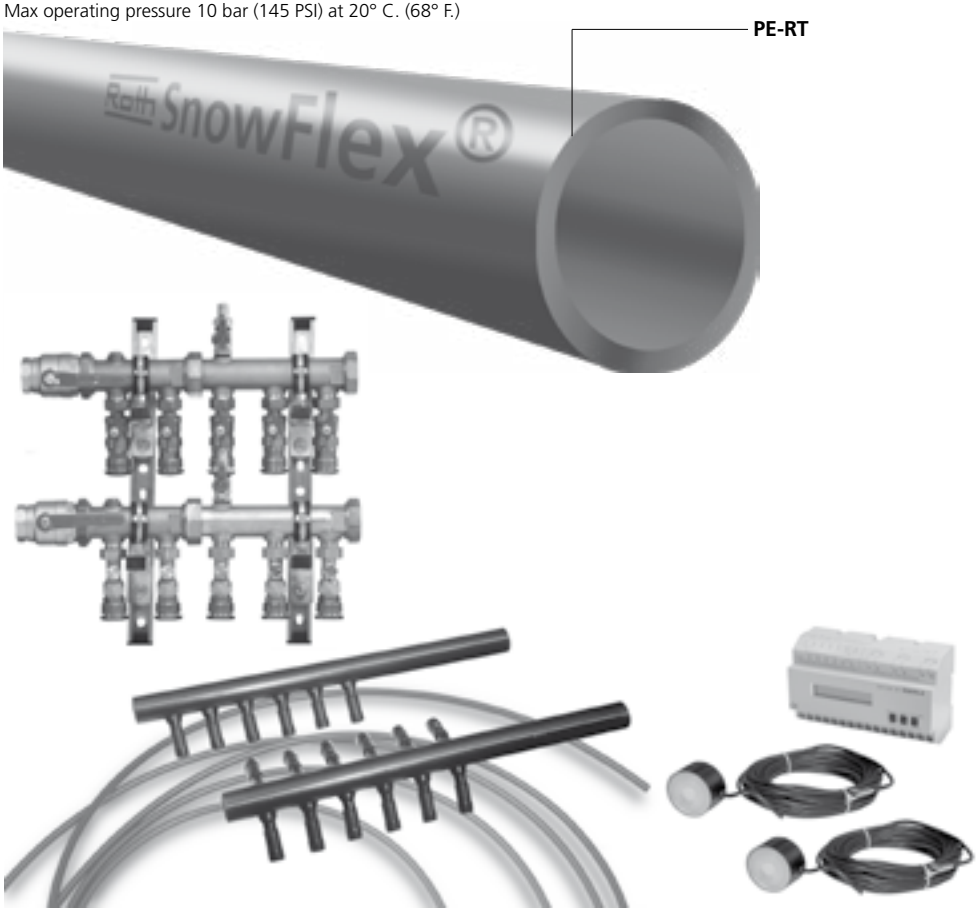


The pipes are assembled with Roth PressCheck® press fittings that come in PPSU or in brass. PPSU is a durable plastic material with good characteristics in terms of strength and usable life. PPSU fittings additionally contribute a competitive installation process compared to systems with metal fittings. All fittings with pipe thread are made of brass.

Roth PressCheck® fittings are permeable while not pressed. This prevents an installation from being left without pressed fittings. Roth manufactures its own Alu-LaserPlus® and PPSU fittings. This ensures high, uniform quality with the Roth system guarantee.

Roth SnowFlex® Ground Heating System – a complete snow melt system for keeping outdoor areas free from snow and ice.

Snow melt systems are used for ramps, squares and plazas, pedestrian streets, airplane hangars, soccer (football) fields, port facilities, etc., ensuring that those places are kept free from snow and ice in an easy, cost-effective manner. By exploiting waste heat from industry and heating plants, operating costs can be kept relatively low. Generally speaking, a snow melt system can be a good investment.
Max operating temperature 50° C. (122° F.) at 7 bar (101.5 PSI).
Max short-term temperature 70° C. (158° F.) at 6 bar (87 PSI).
Max operating pressure 10 bar (145 PSI) at 20° C. (68° F.)



Roth SnowFlex® Snow Melt Pipe 25 x 2.3 mm

Roth snow melt pipes are manufactured from PE-RT (Polyethylene Raised Temperature). This ensures the best combination of flexibility, pressure, and temperature stability. This pipe quality ensures a long usable life and is suitable for variations in pressure and temperature.
Since the snow melt systems contains antifreeze, an exchanger between the system and the boiler system is required. For this reason there is no oxygen block on the Snow-Flex pipe.

Roth Tank Systems
– the simple and safe way to install an oil tank!

Roth DVT oil tanks are double-walled tanks built with an internal tuyere shaped plastic container made of polyethylene and enclosed by a corrosion resistant steel covering. In the hollow space between the plastic container and the steel covering, a sounding tube is installed to report any leakage from the plastic container.

The tank is equipped with four 2" connections and comes with a tank meter, a tank alarm (long), as well as a 1½" plastic nipple joint.
The tank is equipped with two carrying handles that make it easy to transport.
The tank can be installed separately or connected to other tanks.

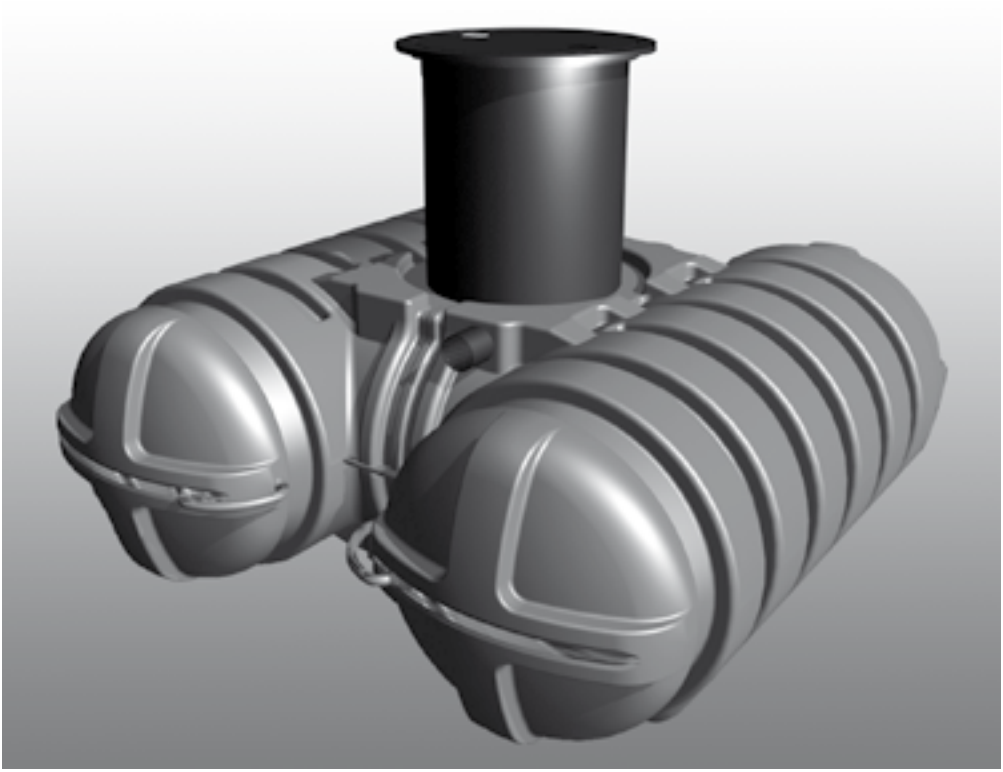
The plastic container

The container is made in polyethylene according to the CoEx plus method (double extrusion). This method creates a double-walled container where each layer has different characteristics.

FACTS

- **Double-walled with alarm**
- **Multiple tanks can be built together**
- **3 sizes: 620, 1000, and 1500 litres**
- **No corrosion**
- **Easy to transport**
- **Approved by the Danish Environmental Agency**
- **Nice surface; no ugly scratches**
- **Low weight**
- **Very safe**

Roth Rainwater Systems



Saving the environment saves water and money ...good reasons for using rainwater

The current daily tap water consumption is approx. 140 litres per person. By consciously limiting our water consumption, we can reduce it to as low as 100 litres without giving up our comfort level.

However, in some areas we can entirely avoid using the costly drinking water; there is no problem associated with using rainwater for: **• Toilet flush** **• Laundry**

This way we can achieve up to a 42% savings on drinking water without a problem.

Professional, properly designed rainwater systems ensure fully adequate water quality in these areas.

Research has shown that the quality of rainwater is significantly higher than what is required for swimming at our beaches. Likewise, laundry washed with rainwater has not shown to contain higher bacterial contents than laundry washed with regular tap water.

Roth Solar Heating Systems

– the sun provides the earth with great amounts of energy

If it were possible to catch the energy that the sun emits to the earth for half an hour, it would be possible to cover the energy needs of the entire world for one full year.

Roth has taken a step into the future in terms of systems with solar heat, and its systems can be adapted to virtually all system types, whether intended for heating domestic water or a home.

The technology is cutting edge, and the quality is the same high level as the well-known Roth products that have made the company a recognized brand. The solar panel systems are complete and efficient with top performance. Each individual system is individually adapted to the needs of the user and can thus deliver two-thirds of an average family's annual domestic water consumption.

The solar heat can be exploited efficiently by also adding any residual heat to the heating system.

A complete solar heating system from a single supplier!

The solar heat system from Roth is a complete system with solar panels, tanks, control, and adjustments.

Adapted solutions

Roth offers a ready-to-install system – from standard domestic water systems to complex systems for transfer of heat to the heating system. Contact Roth for the design of your solar heating system.

Roth Heliostar® solar panel

Heliostar® solar panels are manufactured from the latest technology and are produced without a vulnerable metal frame. The frame construction is made of polycarbonate, which ensures shock resistance and high UV and temperature resistance. The weight of the panels is thereby less, making handling and installation easier. Heliostar solar panels are flat and uniform, which along with the highly transparent safety glass renders an aesthetically pleasing result.

Heliostar® comes in the sizes 2.18 and 2.52 m2 and can, of course, be combined to cover all panel needs. The Heliostar® mounting kits make it possible to mount the panels on top of the roof, integrated in the roof, or as a free-standing installation.

Own Notes

Roth Pipe Overview
– For domestic water, heating, and cooling systems

Roth is one of Europe's largest manufacturers of pipes for domestic water systems and heating systems. The production is ISO 9001 compliant, and it is monitored by a variety of external testing institutions. Through innovative and qualitative product development, the following well-known and renowned brand names have been developed.
In-house pipe production – the heart of our installation systems – makes up an important part of what our company is based on. Roth produces more than 80 mill. meters of pipes on an annual basis.

Roth X-PERT S5® ® floor heating pipe – the result of an innovative and qualitative product development

Roth LinPex® floor heating pipe – a well-known quality product developed to meet even the strictest requirements.

Roth Alu-LaserPlus® – a VA (Water and Drainage) approved pipe and thereby suitable for both domestic water and heating systems.

Roth MultiPex® – a PE-Xc VA (Water and Drainage) approved pipe, equipped with an EVOH.

Roth SnowFlex® – a highly flexible PE-RT pipe for snow melt.

Control and Safety

Internal control

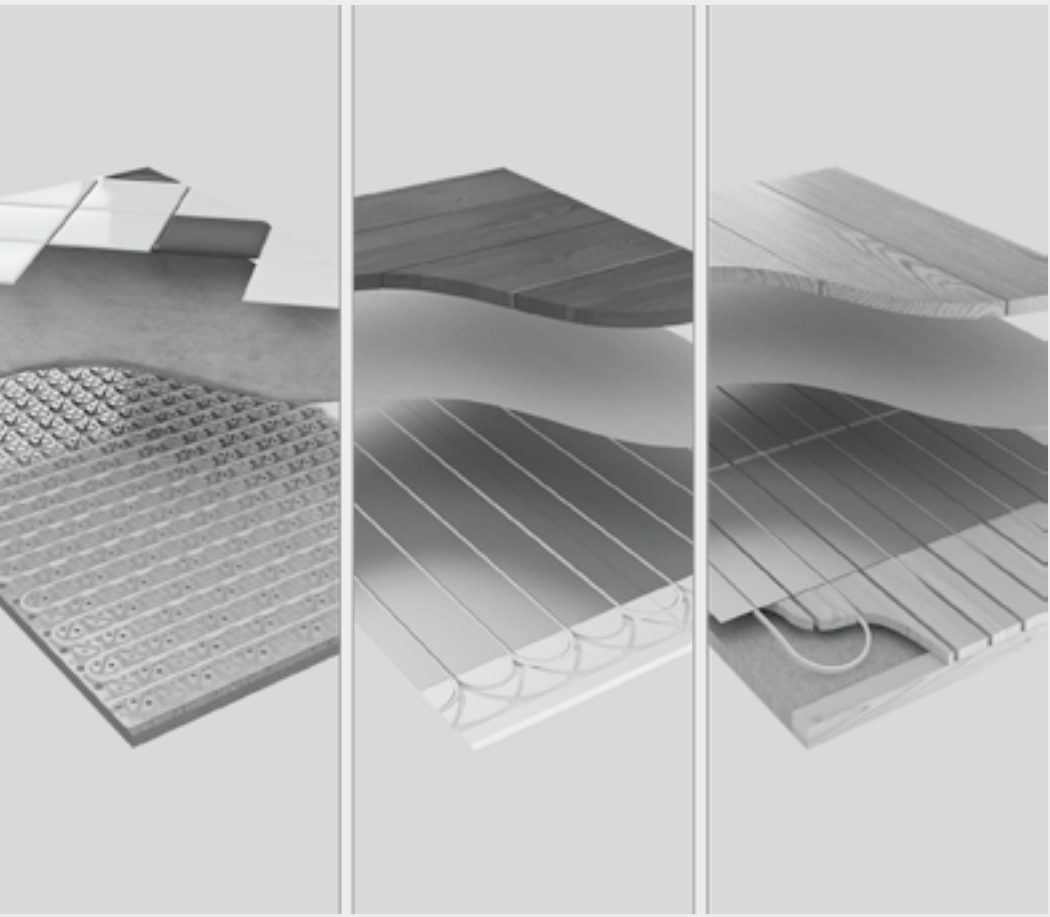
At Roth Nordic, internal control is an essential, high-priority activity. Internal control starts with a comprehensive inspection of the raw material and does not end until the moment the product is delivered to the customer. For Roth Nordic, internal control is not just something that has to do with the organization; it is about attitude, priorities, and long-term thinking.

External control

At Roth Nordic, external control and monitoring take place on a continuous basis and in close cooperation with well-known international institutions such as DIN, TUV, ISO, Lloyd's Register, DVGW, KIWA, and several others.

Own Notes

Roth Floor Heating System
Product Range

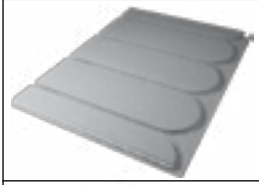
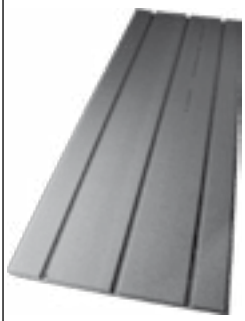


... living full of energy!

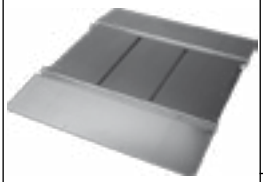
Roth Floor Heating Pipes

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth X-PERT S5® pipes The Roth X-PERT® pipe is a quality product developed for floor heating. The pipes is made up of 5 layers - an inside layer consisting of PE (polyethylene), adhesive, diffusion block, and an adhesive; and an outside layer consisting of a PE protective coating. Max. operating pressure: 6 bar (87 PSI) Max short-term temperature: 100 °C(212° F.) Max continuous temperature: 70 °C (158° F.)			
	Roth X-PERT S5® 10,5 x 1,3 mm 70 m Weight: 4,2 kg Volume: 76 dm³	roll	1/10	087207.210
	Roth X-PERT S5® 10,5 x 1,3 mm 200 m Weight: 9,2 kg Volume: 76 dm³	roll	1/10	087207.230
	Roth X-PERT S5® 16 x 2,0 mm 90 m Weight: 10,0 kg Volume: 128 dm³	roll	1/6	087207.216
	Roth X-PERT S5® 16 x 2,0 mm 200 m Weight: 22,0 kg Volume: 178 dm³	roll	1/4	087207.235
	Roth X-PERT S5® 16 x 2,0 mm 650 m Weight: 65,0 kg Volume: 410 dm³	roll	1/2	087207.237
	Roth X-PERT S5® 20 x 2,0 mm 120 m Weight: 14,0 kg Volume: 128 dm³	roll	1/6	087207.220
	Roth X-PERT S5® 20 x 2,0 mm 240 m Weight: 26,0 kg Volume: 178 dm³	roll	1/4	087207.240
	Roth X-PERT S5® 20 x 2,0 mm 600 m Weight: 70,1 kg Volume: 541 dm³	roll	1/3	087207.249
	Roth Alu-LaserPlus® pipes The Alu-LaserPlus® pipe is a quality product that has been developed for water and heating systems. The pipe is made up of 5 layers: on the inside a PE pipe, adhesive, laser-welded aluminium coating, and adhesive, and on the outside a protective PE layer. The aluminium coating makes the pipe inherently stable and diffusion tight. Max. operating pressure: 10 bar (145 PSI) Max short-term temperature: 95° C. (203° F.) Max continuous temperature: 70 °C (158° F.)			
	Roth Alu-LaserPlus® pipe 16 x 2,0 mm 50 m Weight: xx,x kg Volume: 100 dm³	roll	1	087100.215
	Roth Alu-LaserPlus® pipe 16 x 2,0 mm 100 m Weight: 13,0 kg Volume: 100 dm³	roll	1/6	087100.216
	Roth Alu-LaserPlus® pipe 16 x 2,0 mm 240 m Weight: 22,0 kg Volume: 192 dm³	roll	1/4	087100.246
	Roth Alu-LaserPlus® pipe 16 x 2,0 mm 500 m Weight: 55,0 kg Volume: 256 dm³	roll	1/2	087100.276
	Roth Alu-LaserPlus® pipe 20 x 2,0 mm 100 m Weight: 17,8 kg Volume: 128 dm³	roll	1/6	087100.220
	Roth Alu-LaserPlus® pipe 20 x 2,0 mm 240 m Weight: 38,4 kg Volume: 230 dm³	roll	1/4	087100.250

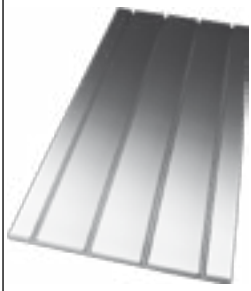
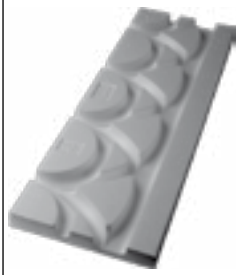
Floor Structure Heating Systems

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth chipboard System 22 mm Floor chipboard with milled out grooves. Used in conjunction with turn-over chipboards and heat distribution plates for 16 mm floor heating pipes. **Roth chipboard** Building height: 22 mm Measurements: 600 x 1800 x 22 mm Possible pipe distance: 200 mm Weight: 17,9 kg Volume: 24,5 dm³	ea.	1/36	339295.022
	**Roth Allround turn-over chipboard** Building height: 22 mm Measurements: 800 x 600 x 22 mm Possible pipe distance: 200 mm Weight: 5,4 kg Volume: 7,9 dm³	ea.	1/72	339295.522
	Roth Turn-over chipboard used where a light partition wall is to be subsequently built. The floor heating pipes turn below the Turn-over chipboard. Building height: 22 mm Measurements: 600 x 595 x 22 mm Possible pipe distance: 200 mm Weight: 5,4 kg Volume: 7,9 dm³	ea.	1/72	339295.521
	Roth heat distribution plate for chipboard board Measurements: 160 x 1200 x 0,3 mm Weight: 0,34 kg Volume: 40 ea.. = 57,8 dm³	ea.	40/560	339217.016
	Roth heat distribution plate for chipboard board Measurements: 180 x 1200 x 0,5 mm Weight: 0,34 kg Volume: 40 ea.. = 57,8 dm³	ea.	40/560	339217.116
	**Roth Universal Chipboard System** 22 mm Floor chipboard with milled out grooves. There are tongues and grooves on all edges of the board. return boards for the Universal Chipboard System do not exist. The bent turns are milled out when the board is placed. The same heat distribution plates are used as in the Chipboard System above. **Roth Universal Chipboard** Building height: 22 mm Measurements: 600 x 1800 x 22 mm Possible pipe distance: 200 mm Weight: 17,9 kg Volume: 24,5 dm³	ea.	1/36	339295.122

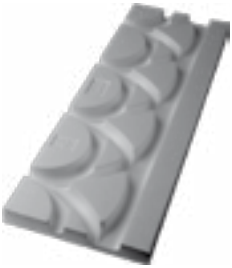
Floor Structure Heating Systems

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	**Roth Self-sustaining Heat Distribution Plates, 16** Heat distribution plate for joists with a centre distance of 600 mm for 16 mm floor heating pipe. Measurements: 600 x 500 x 0,5 mm Possible pipe distance: 300 mm Weight: 1,5 kg Volume: 200 ea.. = 787 dm³	ea.	1/100	339231.046
	Roth Self-sustaining Heat Distribution Plates, 20 heat distribution plate for joists with a centre distance of 600 mm for 20 mm floor heating pipe. Measurements: 600 x 500 x 0,5 mm Possible pipe distance: 300 mm Weight: 1,5 kg Volume: 200 ea.. = 787 dm³	ea.	1/100	339231.065
	Roth Heat Distribution Plates for laths Heat distribution plate for laths with a centre distance of 300 mm for 20 mm floor heating pipe. Measurements: 260 x 1200 x 0,5 mm Weight: 0,34 kg Volume: 18 ea.. = 26 dm³	ea.	18	339217.020
	Roth Heat Distribution Plates for laths Heat distribution plate for laths with a centre distance of 300 mm for 16 mm floor heating pipe. Measurements: 260 x 1200 x 0,7 mm Weight: 0,65 kg Volume: 20 ea.. = 57,8 dm³	ea.	20	339217.216
	Roth Heat Distribution Plates, 20 Heat distribution plate for laths with a centre distance of 300 mm for 20 mm floor heating pipe. Measurements: 600 x 500 x 0,5 mm Possible pipe distance: 300 mm Weight: 1,5 kg Volume: 200 ea.. = 787 dm³	ea.	1/200	339231.055

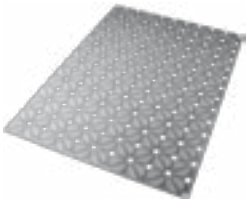
Floor Heating Systems for Fixed Underlying Layers

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Combi Plate System The Combi plate System consists of a Combi Plate and a Combi turn-over plate. The combi plate is cast polystyrene with an integrated heat distribution plate in 0.45 mm steel with 2 tracks and a centre distance of 300 mm for floor heating pipes. **Roth Combi Plate** Building height: 25 mm Measurements: 600 x 500 x 25 mm Possible pipe distance: 300 mm Density: 30 g/l Weight: 0,20 kg Volume: 0,03 dm³	ea.	1/15	339311.025
	Roth Combi Turn-over boards Building height: 25 mm Measurements: 600 x 250 x 25 mm Density: 30 g/l Weight: 0,23 kg Volume: 0,02 dm³	ea.	1/30	339311.825
	**Roth Compact System** The compact system consists of polystyrene chipboards with a built-in heat distribution plate in 0.45 mm aluminium with track, centre distance 150 mm, for 10.5 and 16 mm floor heating pipes, respectively. **Roth Compact System 14/10,5 - 5,2 m²** Building height: 14 mm Measurements: 1200 x 610 x 14 mm Possible pipe distance: 150 mm Density: 50 kg/m³ Pre-packing: 5.2 m² Weight: 10,3 kg/ pre-packing Volume: 81,0 dm³	ea.	1/10	339318.006
	**Roth Compact System 14/10,5 - 8,9 m²** Building height: 14 mm Measurements: 1200 x 610 x 14 mm Possible pipe distance: 150 mm Density: 50 kg/m³ Pre-packing: 8,9 m² Weight: 19,0 kg/ pre-packing Volume: 145,5 dm³	ea.	1/8	339318.010
	Roth Compact System The compact system consists of polystyrene chipboards with a built-in heat distribution plate in 0.45 mm aluminium with track, centre distance 150 mm, for 10.5 and 16 mm floor heating pipes, respectively. **Roth Compact System 24/16 - 8,9 m²** Building height: 24 mm Measurements: 1200 x 610 x 24 mm Possible pipe distance: 150 mm Density: 50 kg/m³ Pre-packing: 8.9 m² Weight: 21,9 kg/ pre-packing Volume: 252,7 dm³	ea.	1/6	339318.024

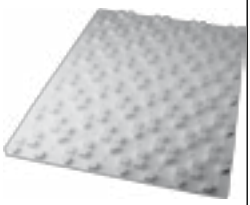
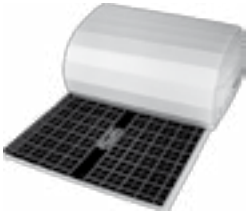
Floor Heating Systems for Fixed Underlying Layers

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	**Roth Compact Turn-over boards 14/10,5** Building height: 14 mm Measurements: 202 x 610 x 14 mm Density: 50 kg/m³ Pre-packing: 10 pieces Weight: 1,0 kg/ pre-packing Volume: 33,8 dm³/ pre-packing	ea.	1	339318.810
	Roth Compact Turn-over chipboards 24/16 Building height: 24 mm Measurements: 202 x 610 x 24 mm Density: 50 kg/m³ Pre-packing: 10 pieces Weight: 1,4 kg/ pre-packing Volume: 33,8 dm³/ pre-packing	ea.	1	339318.824
	Roth Compact FLEX FIX Fast-hardening, cement-based flexible glue, which is use in connection with the Compact system Weight: 25 kg/ bag Volume: 25,2 dm³	bag	1/40	339349.818
	Roth Clima Comfort FLOW Filler used in connection with Compact system boards where fall build-up is desired. Weight: 25 kg Volume: 19,2 dm³	bag	1/40	339349.825

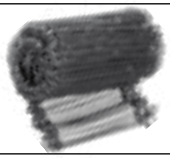
Embedded in Concrete

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Mounting Rail The mounting rail is fastened to the insulation using fastening clips. **Roth Mounting Rail 10,5 mm** Building height : 15,5 mm Possible pipe distance : 100, 150, 200 mm Længde : 2 m, Weight: 0,4 kg Volume: 1,1 dm³ Consumption of material : 1 piece/m²	ea.	1/16/448	339656.210
	Roth Mounting Rail 16 mm Building height : 25 mm Possible pipe distance : 100, 150, 200, 250 mm Længde : 2 m, Weight: 0,98 kg Volume: 1,5 dm³ Consumption of material : 0,5 piece/m²	ea.	1/16/448	339656.216
	Roth Mounting Rail 20 mm Building height : 32 mm Possible pipe distance : 100, 150, 200, 250, 300 mm Længde : 2 m, Weight: 1,25 kg Volume: 2,0 dm³ Consumption of material : 0,5 piece/m²	ea.	1/16/448	339656.220
	Roth Fastening Clips Come in packages containing 100 pieces each. Weight: 0,0015 kg Volume: 0,005 dm³	ea.	100	339656.290
	**Roth Clima Comfort system board** System board with glue on the bottom part. Used wherever low building height is required. Used with 10.5 mm floor heating pipe. Building height : 14 mm Measurements per chipboard : 1072x772x14 mm Pipe distance : 75 mm Pre-packing : 5 plader = 3,92 m² Weight: 5,7 kg/ package Volume: 65 dm³	pck.	1	339298.114
	Roth Clima Comfort FLOW Putty used in connection with Clima Comfort system boards Weight: 25 kg Volume: 19,2 dm³ Consumption : approx. 1,7 kg/mm and m²	bag	1/40	339349.825
	Roth Clima Comfort Edge Insulation Used in connection with Clima Comfort system boards. Weight: 1 kg / roll Length : 25 m Volume: 17 dm³	roll	1/4	339259.025

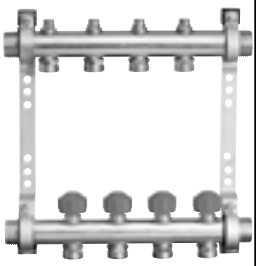
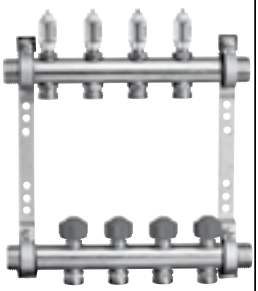
Embedded in Concrete

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	**Roth Setting chipboard** System board with built-in pipe holders for 16 and 20 mm floor heating pipes. Used as insulation with building height requirements. **Roth Setting chipboard 24/51** Building height: 51 mm Insulation thickness: 24 mm Measurements: 1200 x 800 x 51 mm Possible pipe distance: 100, 150, 200, 250, 300 mm Density: 30 kg/m³ Material: Polystyrene Pre-packing: 13 chipboards = 12.48 m² Weight: 13,1 kg/ package Volume: 580 dm³/ package	ea.	1/4	339298.224
	Roth system board EPS insulation 25-2, 28 dB. 1 package =15 m² Insulation thickness:: 25 mm Size: 1000x1000x25 mm Volume: 375 dm³/package	pck	1	339285.025
	Roth system board EPS insulation 30-2, 28 dB. 1 package =15 m² Insulation thickness:: 35 mm Size: 1000x1000x35 mm Volume: 450 dm³/package	pck	1	339285.030
	**Roth system board roll EPS insulation 25-2, 28 dB.** 1 roll = 12 m² Insulation thickness:: 25 mm Size: 1000x12000x25 mm Volume: approx. 400 dm³/roll	roll	1	339285.225
	Roth system board roll EPS insulation 30-3, 29 dB 1 roll = 10 m² Insulation thickness: 30 mm Size: 1000x10000x30 mm Volume: approx. 400 dm³/roll	roll	1	339285.265

Pipe Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Plastic Pipe Bend x 20 mm Weight: 0,07 kg Volume: 0,5 dm³	ea.	1/50	087249.220
	Roth Steel Pipe Bend x 20 mm Weight:0,08 kg Volume: 0,3 dm³	ea.	1/25	087251.220
	Roth Pipe Bend Support 25/29 Used for 10.5, 16, and 20 mm pipes. Weight: 0,07 kg Volume: 1,1 dm³	ea.	1/250	087255.275
	Roth Pipe Bend Support 33/37 Used for 10.5, 16, and 20 mm pipes. Weight: 0,11 kg Volume: 1,4 dm³	ea.	1/250	087255.284
	Roth Pipe Cutter Used for floor heating pipes. Weight: 0,3 kg Volume: 0,1 dm³	ea.	1/25	087393.220
	**Roth Steel Wire Ties** Used for fastening floor heating pipes to the reinforcement mesh. Bags containing 250 pieces. Weight: 0,4 kg Volume: 1,5 dm³	bag	1/40	087421.225
	Roth Tool for steel wire ties Used for fastening floor steel wire ties to the reinforcement mesh. Weight: 0,4 kg Volume: 0,3 dm³	ea.	1/10	087393.250
	Roth Pipe Holder For 600 and 650 m rolls (core dia. 500 mm) Weight: 25,0 kg Volume: 1056 dm³	ea.	1	087397.200
	Roth Pipe Clips For simple fastening of pipe clips when installing floor heating pipes to the insulation with a minimum of 30 kg/m³			
	Roth Pipe Clips, length 43 mm Weight: 0,0013 kg Volume: 0,003 dm³	ea.	300	339654.220
	Roth Pipe Clips, length 58 mm Weight: 0,0015 kg Volume: 0,005 dm³	ea.	300	339654.221
	Roth Tool for pipe clips Weight: 7,5 kg Volume: 20,0 dm³	ea.	1	339654.229

Floor Heating Units and Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	**Floor heating units- 1", Hand controlled w/o manifold coupling with jig**			
	Roth FH manifold unit - 2 with jig Weight: 1,7 kg Volume: 8,6 dm³	ea.	1	401973.002
	Roth FH manifold unit - 3 with jig Weight: 2,0 kg Volume: 8,6 dm³	ea.	1	401973.003
	Roth FH manifold unit - 4 with jig Weight: 2,5 kg Volume: 13 dm³	ea.	1	401973.004
	Roth FN manifold unit - 5 with jig Weight: 2,8 kg Volume: 13 dm³	ea.	1	401973.005
	Roth FH manifold unit - 6 with jig Weight: 3,3 kg Volume: 16,5 dm³	ea.	1	401973.006
	Roth FH manifold unit - 7 with jig Weight: 3,6 kg Volume: 16,5 dm³	ea.	1	401973.007
	Roth FH manifold unit - 8 with jig Weight: 4,2 kg Volume: 20,4 dm³	ea.	1	401973.008
	Roth FH manifold unit - 9 with jig Weight: 4,6 kg Volume: 20,4 dm³	ea.	1	401973.009
	Roth FH manifold unit - 10 with jig Weight: 5,0 kg Volume: 26,2 dm³	ea.	1	401973.010
	Roth FH manifold unit - 11 with jig Weight: 5,4 kg Volume: 26,2 dm³	ea.	1	401973.011
	Roth FH manifold unit - 12 with jig Weight: 5,8 kg Volume: 26,2 dm³	ea.	1	401973.012
	**Floor Heating Units with Flow Meter - 1", Hand controlled w/o manifold coupling w/jig**			
	Roth FH manifold unit w/ Flow Meter - 2 Weight: 1,7 kg Volume: 8,6 dm³	ea.	1	401973.502
	Roth FH manifold unit w/ Flow Meter - 3 Weight: 2,0 kg Volume: 8,6 dm³	ea.	1	401973.503
	Roth FH manifold unit w/ Flow Meter - 4 Weight: 2,5 kg Volume: 13,0 dm³	ea.	1	401973.504
	Roth FH manifold unit w/ Flow Meter - 5 Weight: 2,8 kg Volume: 13,0 dm³	ea.	1	401973.505
	Roth FH manifold unit w/ Flow Meter - 6 Weight: 3,3 kg Volume: 16,5 dm³	ea.	1	401973.506
	Roth FH manifold unit w/ Flow Meter - 7 Weight: 3,6 kg Volume: 16,5 dm³	ea.	1	401973.507
	Roth FH manifold unit w/ Flow Meter - 8 Weight: 4,2 kg Volume: 20,4 dm³	ea.	1	401973.508
	Roth FH manifold unit w/ Flow Meter - 9 Weight: 4,6 kg Volume: 20,4 dm³	ea.	1	401973.509
	Roth FH manifold unit w/ Flow Meter - 10 Weight: 5,0 kg Volume: 26,2 dm³	ea.	1	401973.510
	Roth FH manifold unit w/ Flow Meter - 11 Weight: 5,4 kg Volume: 26,2 dm³	ea.	1	401973.511
	Roth FH manifold unit w/ Flow Meter - 12 Weight: 5,8 kg Volume: 26,2 dm³	ea.	1	401973.512

Floor Heating Units and Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Manifold Coupling 3/4" EURO			
	Roth Clima Comfort Manifold Coupling 10,5 x 3/4" EURO Weight: 0,07 kg Volume: 0,01 dm ³	ea.	1	401974.810
	Roth Manifold Coupling 12 x 3/4" EURO Weight: 0,07 kg Volume: 0,03 dm ³	ea.	1/100	401974.812
	Roth Manifold Coupling 15 x 3/4" EURO Weight: 0,07 kg Volume: 0,03 dm ³	ea.	1/100	401974.815
	Roth Manifold Coupling 16 x 3/4" EURO Weight: 0,07 kg Volume: 0,03 dm ³	ea.	1/100	401974.816
	Roth Manifold Coupling 17 x 3/4" EURO Weight: 0,07 kg Volume: 0,03 dm ³	ea.	1/10	401974.817
	Roth Manifold Coupling 18 x 3/4" EURO Weight: 0,07 kg Volume: 0,03 dm ³	ea.	1/100	401974.818
	Roth Manifold Coupling 20 x 3/4" EURO Weight: 0,07 kg Volume: 0,03 dm ³	ea.	1/100	401974.820
	Roth Duo Manifold 10,5 mm x 3/4" The Roth Duo Manifold is for 10.5 mm X-PERT® pipes. The Duo Manifold is installed on the Floor Heating Unit, creating the possibility for attaching 2 floor heating hoses to one ramification. Weight: 0,3 kg Volume: 0,16 dm³	ea.	1	401974.830

Floor Heating Units and Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Plug with run-off and ventilation Used at the end of Floor Heating Unit if no floor heating shunt is installed. 1 kit consists of 2 units. Weight: 0,4 kg Volume: 0,3 dm ³	kit	1	401973.828
	Ball valve kit 1", straight Used for shutting off the floor heating system. 1 kit consists of 2 units. Weight: 0,7 kg Volume: 0,4 dm³	kit	1	401973.858
	Ball valve kit 1", elbow Used for shutting off the floor heating system. 1 kit consists of 2 units. Weight: 0,9 kg Volume: 0,7 dm³	kit	1	401973.859
	Ball valve kit 1", straight with thermometer Used for shutting off floor heating system and provides the option to read the flow and return flow temperatures. 1 kit consists of 2 units. Weight: 0,7 kg Volume: 0,5 dm³	kit	1	401973.868
	Bypass valve kit 1" Used as bypass between the flow and return flow manifold. Weight: 1,4 kg Volume: 3,3 dm³	ea.	1	401973.808
	Adj.-valve kit 1" (4-36 l/min) Used when there is a need to measure the overall water volume of the manifold. The kit includes a control valve with a flow meter, as well as a shut-off valve. Weight: 0,8 kg Volume: 1,6 dm³	kit	1	401973.818
	Connector kit 1", straight Used for joining 2 manifolds, etc. 1 kit consists of 2 units. Weight: 0,3 kg Volume: 0,1 dm³	kit	1	401973.838

Floor Heating Units and Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Connector 1" nipple x 1" circ., elbow Used for joining 2 manifolds, etc. Sold as 1 unit. Weight: 0,3 kg Volume: 0,2 dm³	ea.	1	401973.839
	Ball valve 3/4" EURO Used when the option of blocking a single floor heating hose is desired. Weight: 0,1 kg Volume: 0,1 dm³	ea.	1	401973.846
	Thermometer tee 3/4" EURO Used when the temperature display of a single floor heating hose is desired. Weight: 0,2 kg Volume: 0,1 dm³	ea.	1	401973.876
	Insulation for manifolds (for 6 ramif.) Used for insulating the floor heating manifold. Be aware of the new rules for energy marking of buildings. Weight: 0,4 kg Volume: 8,8 dm³	ea.	1	401973.886
	Roth Flow Meter, 3/8" nipple Roth Flow Meter for Roth Floor Heating Unit. Weight: 0,1 kg Volume: 0,1 dm³	ea.	1	401974.890
	Roth Lower Part for Flow Meter Use this lower part if a Flow Meter is desired on the floor heating units. 401973.002 - 401973.512. Weight: 0,1 kg Volume: 0,1 dm³	ea.	1	401974.897
	Roth Adjustment Key for Flow Meter Used for adjusting flow meter Weight: 0,1 kg Volume: 0,1 dm³	ea.	1	401974.901

Floor Heating Units and Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Grip for Flow Meter Used as a manual setting on the return flow of the floor heating unit. Weight: 0,1 kg Volume: 0,1 dm³	ea.	1/10	401974.931
	Roth Control Valve Replacement control valve for floor heating unit. Weight: 0,1 kg Volume: 0,1 dm³	ea.	1	401974.903
	Roth Presetting Valve Replacement presetting valve for floor heating unit. Weight: 0,1 kg Volume: 0,1 dm³	ea.	1	401974.913
	Roth Lower Part for control valve Weight: 0,1 kg Volume: 0,1 dm³	ea.	1	401974.898
	Roth Closing Cap 3/4" with gasket Used for plugging any of the ramifications of the floor heating unit. Weight: 0,04 kg Volume: 0,01 dm ³	ea.	1	048300.106

Floor Heating Units and Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth MultiUnit™ with supports Used for attaching floor heating unit and floor heating shunt, if applicable. Weight: 7,5 kg Volume: 64,8 dm³	ea.	1	402000.200
	Roth stainless steel pipe set for MultiUnit™ Used as pipe connection to heat source. Weight: 4,1 kg Volume: 131,7 dm³	ea.	1	402000.918

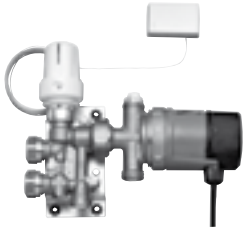
Roth Floor Heating Shunts

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Floor Heating Shunt with a thermostatic valve plus an Alpha2 L 15-60 pump L:190 mm, H:280 mm, D:95 mm The thermostatic valve provides the floor heating system with simple and precise flow temperature control. The temperature is adjusted on the thermostat head at a range of 20-70° C and can be set at a maximum flow temperature such as 40° C to avoid malfunctioning. The pump for the shunt can be connected to Touchline™ or CABLE™ room control, which means that the pump will only run when there is a heating requirement. Capacity: appr.: 230 m² Weight:4,6 kg Volume:15,2 dm³	ea.	1	466210.040
	Roth Shunt with 3-way Valve and Alpha2 Pump with thermostatic valve L: 275 mm, H: 319 mm, D: 143 mm The thermostatic valve provides the floor heating system with simple and precise flow temperature control. The temperature is adjusted on the thermostat head at a range of 20-70° C and can be set at a maximum flow temperature such as 40° C to avoid malfunctioning. The pump for the shunt can be connected to Touchline™ or CABLE™ room control, which means that the pump will only run when there is a heating requirement. Capacity: appr. 230 m² Weight:3,6 kg Volume:14,9 dm³	ea.	1	466210.218
	Roth Shunt with 3-way Valve and Alpha2 Pump with electronic control unit L: 260 mm, H: 319 mm, D: 143 mm The shunt control box regulates according to the 2 sensors in the flow and return flow, respectively. The return temperature for the system can be adjusted from 15 to 40° C using the shunt control box. The flow sensor ensures that the temperature won't exceed the maximum flow temperature, which by the way can be set to 50, 55, or 60° C. The pump for the shunt can be connected to Touchline™ or CABLE™ room control, which means that the pump will only run when there is a heating requirement. Capacity: appr. 230 m² Weight:6,9 kg Volume:14,9 dm³	ea.	1	466210.208
	Roth Shunt with 3-way Valve and Alpha2 Pump with weather compensator L: 256 mm, H: 360 mm, D: 143 mm Weather compensation regulates the flow temperature of the floor heating system according to the outside temperature. This ensures an exact and adapted temperature as needed. The pump for the shunt can be connected to Touchline™ or CABLE™ room control, which means that the pump will only run when there is a heating requirement. Capacity: appr. 230 m² Weight:7,1 kg Volume:14,9 dm³	ea.	1	466210.228

ShuntUnits

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth ShuntUnit for 1 circuit ShuntUnit comes pre-essembled with manifold, bracket, pump etc. The pump is with automatic venting program. Comes without couplings. Capacity: approx 80 m² Weight: 4,6 kg Volume: 12,3 dm³	ea.	1	466212.110
	Roth ShuntUnit for 2 circuits ShuntUniten leveres with præ-monterede Manifoldrør, pumpe, monteringsbeslag mv. Pumpen er with automatisk udluftningsprogram. Kapacitet: ca. 80 m² Weight: 5,1 kg Volume: 12,3 dm³	ea.	1	466212.120
	Roth ShuntUnit for 3 circuits ShuntUniten leveres with præ-monterede Manifoldrør, pumpe, monteringsbeslag mv. Pumpen er with automatisk udluftningsprogram. Kapacitet: ca. 80 m² Weight: 5,6 kg Volume: 16,3 dm³	ea.	1	466212.130
	Roth ShuntUnit for 4 circuits ShuntUniten leveres with præ-monterede Manifoldrør, pumpe, monteringsbeslag mv. Pumpen er with automatisk udluftningsprogram. Kapacitet: ca. 80 m² Weight: 6,1 kg Volume: 16,3 dm³	ea.	1	466212.140
	ShuntUnit extension for 1 circuit The extension comes with 2 pcs. nipples. Comes without couplings. Weight: 1,2 kg Volume: 3,0 dm³	ea.	1	466212.766
	Two-way Manifold Coupling ¾" EURO **Roth Manifold Coupling 10,5 x ¾" EURO** **Roth Manifold Coupling 12 x ¾" EURO** **Roth Manifold Coupling 15 x ¾" EURO** **Roth Manifold Coupling 16 x ¾" EURO** **Roth Manifold Coupling 17 x ¾" EURO** **Roth Manifold Coupling 18 x ¾" EURO** **Roth Manifold Coupling 20 x ¾" EURO**	 ea. ea. ea. ea. ea. ea. ea.	 1 1/100 1/100 1/100 1/10 1/100 1/100	 401974.810 401974.812 401974.815 401974.816 401974.817 401974.818 401974.820

Roth Floor Heating Shunts

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	**Roth Mini Shunt** L: 242 mm, H: 200 mm, D: 93 mm The mini shunt is used for a single floor heating hose. However, two hoses can be attached by using the Duo Manifold, HVAC no. 046296.220. Comes with a thermostatic valve, controlled by a room sensor with a 5 m capillary pipe, which can be installed in areas with a temperature of 10° - 26° C. (50° - 79° F.) with a flow limitation of 45° C (113° F.). The shunt can be connected "out in the system" just like a radiator for both single-string and dual-string systems. Comes without couplings. Weight: 2,6 kg Volume: 7,5 dm³	ea.	1	466210.101
	Roth Mini Shunt, wireless L: 242 mm, H: 200 mm, D: 93 mm The mini shunt is used for a single floor heating hose. However, two hoses can be attached by using the Duo Manifold, HVAC no. 046296.220. Controlled by a wireless room thermostat in areas with a temperature of 5° - 30° C. (41° - 86° F.) with a flow limit of 45° C. (113° F.). The shunt can be attached "out in the system", just like a radiator for both single-string and dual-string systems. Comes without couplings. Weight: 2,6 kg Volume: 7,5 dm³	ea.	1	466210.301

Roth Floor Heating Shunts

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Thermometer 0 - 80°C Thermometer for floor heating shunt models UNIVERSAL, PRO, and three-way.	ea.	1	466210.848
	Roth Circulation Pump Alpha2 L 15/60 Pump for floor heating shunt models .	ea.	1	466210.725
	Roth Automatic Control Box Automatic Control Box for Roth UNIVERSAL floor heating shunt, HVAC no. 4666210.042; PRO floor heating shunt, HVAC no. 466210.120; and single-hose shunt, HVAC no. 466210.100. Weight: 0,8 kg Volume: 3,0 dm³	ea.	1	466210.825
	Top part for Vortex Pump The Vortex top part is used for replacement on the single-hose shunt and the Mini Shunt. Running wheel and gasket included.	ea.	1	380896.123
	Roth Thermostat for Mini Shunt Comes with a 5 m capillary pipe and a temperature range of 10° - 26° C. (50° - 79° F.).	ea.	1	403466.005
	Roth Thermostat, 20° -70°C Thermostat for the Roth UNIVERSAL floor heating shunt HVAC no, 466210.040 and PRO floor heating shunts HVAC no, 466210.121.	ea.	1	466210.840

Floor Heating Shunt Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Wireless Room Control for Mini Shunt Weight: 0,8 kg Volume: 3,0 dm³	ea.	1	466210.834
	Roth Wireless Room Thermostat for Mini Shunt	ea.	1	466210.839
	Battery for Wireless Room Thermostat Mini Shunt	ea.	1	WA1000.003
	Roth Duo Manifold for Mini Shunt Used when attaching 2 floor heating storage devices to the Mini Shunt or the floor heating unit. Comes without couplings. Weight: 0,3 kg Volume: 0,18 dm³	ea.	1	046296.220
	Roth Mobile Electric Boiler 9 kW Complete mobile electric boiler with overflow container, circulation pump, safety valves, a 1" flexi hose for attachment directly on the floor heating manifold, floor chipboard, carrying handles, and constant flow temperature adjuster. The electric boiler is used for heating systems where rapid start-up of the heating system is needed. By changing the electric boiler to phase 1, the effect can be minimized to 4.5 kW. Pump data : UPS 25/60 Capacity : ca. 300 m² Voltage : 230 Volt, 3 faser Weight: 23,2 kg Volume: 160 dm³	ea.	1	345080.090

Roth Touchline™ wireless controller

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Touchline™ 4 channel control unit Weight: 1,3kg Volume: 2,6 dm³ **Roth Touchline™ 8 channel control unit** Weight: 1,5kg Volume: 3,0 dm³ **Roth Touchline™ 12 channel control unit** Weight: 1,7kg Volume: 3,4 dm³ 24 V Controller for room temperature control. For 4, 8 and 12 room thermostat and 6, 12 and 18 thermo motor	ea. ea. ea.	1/6 1/6 1/6	466393.004 466393.008 466393.012
	Roth Touchline™ Thermostat, display, white **Roth Touchline™ Thermostat, display, black** Wireless thermostats with display for Touchline controller Weight: 0,2kg Volume: 0,3 dm³	ea. ea.	1/20 1/20	466393.100 466393.102
	Roth Touchline™ Thermostat, IR sensor, white **Roth Touchline™ Thermostat, IR sensor, black** Wireless thermostats with display and IR sensor for Touchline controller Weight: 0,2kg Volume: 0,3 dm³	ea. ea.	1/20 1/20	466393.120 466393.122
	Roth Touchline™ Thermostat, display, 230 V, white **Roth Touchline™ Thermostat, display, 230 V, black** Wireless thermostats with display for Touchline controller. Requires 230 V connection Weight: 0,2kg Volume: 0,3 dm³	ea. ea.	1/20 1/20	466393.110 466393.112

Roth Touchline™ wireless controller

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Touchline™ antenna External antenna. Used when contoller are placed in steel cabinets.	ea.	1	466393.130
	Roth Touchline™ repeater Used when the distance from wireless thermostat to controller is very long	ea.	1	466393.135
	Roth Touchline™ transformer	ea.	1	466393.140
	Roth Touchline™ PowerLAN 200 Mbps Can be used for connection between Contoller and wireless router.	ea.	1	466393.145
	Roth Touchline™ GSM modul Can be used for activate C/O function in controller.	ea.	1	466393.150
	Roth Touchline™ Dewpoint sensor	ea.	1	466393.155
	Roth Thermo Motor Thermo motor for installation on Roth floor heating manifold. 24 V non-electric closed To be connected to the Roth Touchline controller. Weight: 0,1 kg Volume: 0,3 dm³	ea.	1/100	466275.424

Cable™ wired floor heating control

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Cable Connector Box 24 V Connector Box intended for controlling the heating requirement. The system consists of a Connector Box to which 1- 12 Roth Cable room thermostats can be connected as needed. The Connector Box can be connected with up to 14 thermo motors , though with a max. of 3 pieces per outlet. Weight: 1,3 kg Volume: 1,88 dm³	ea.	1	466395.012
	Roth Cable Room Thermostat, standard 24 V Room Thermostat for individual room control with an option for night heat temperature reduction. Used in connection with Roth Cable Connector Box. Weight: 0,08 kg Volume: 1,18 dm³	ea.	1	466395.100
	Roth Cable Room Thermostat, institution 24 V Room Thermostat for individual room control with an option for night heat temperature reduction. There is no direct access to the control buttons. Used in connection with Roth Cable Connector Box. Weight: 0,08 kg Volume: 1,18 dm³	ea.	1	466395.110
	Roth Cable Room Thermostat, multi 24 V Room Thermostat for individual room control with an option for night heat temperature reduction. Possibility of use of floor sensor and max. and min. temperature settings. Used in connection with Roth Cable Connector Box. Weight: 0,08 kg Volume: 1,18 dm³	ea.	1	466395.140
	Roth Cable Frame Frame for Roth Cable Room Thermostats. Weight: 0,01 kg Volume: 0,01 dm³	ea.	1	466395.850
	Roth Cable Floor Sensor To be connected to the room thermostat in order to regulate the floor temperature. Used in connection with Roth Cable Room Thermostat, multi Weight: 0,01 kg Volume: 0,01 dm³	ea.	1	466395.860
	Roth Cable Pump Relay Weight: 0,01 kg Volume: 0,01dm³	ea.	1	466395.820
	Roth Thermo Motor Thermo motor for installation on Roth floor heating manifold. 24 V non-electric closed To be connected to the Roth Cable Connector Box. Weight: 0,1 kg Volume: 0,3 dm³	ea.	1/100	466275.424

Manifold Cabinets

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Manifold Cabinet Built in 1 mm steel plate with lockable door. Made in white varnish. The cabinets are available for both built-in-wall assembly and free-standing assembly. The cabinets are 700 mm tall with an adjustable depth of 100 - 180 mm.			
	Roth Manifold Cabinet, setting 550 Weight: 16,0 kg Volume: 65,7 dm³	ea.	1/14	046219.236
	Roth Manifold Cabinet, setting 800 Weight: 22,0 kg Volume: 114,0 dm³	ea.	1/7	046219.238
	Roth Manifold Cabinet, setting 1050 Weight: 30,0 kg Volume: 152,0 dm³	ea.	1/7	046219.242
	Roth Manifold Cabinet, free-standing 550 Weight: 22,0 kg Volume: 65,7 dm³	ea.	1/14	046219.266
	Roth Manifold Cabinet, free-standing 800 Weight: 30,0 kg Volume: 114,0 dm³	ea.	1/7	046219.268
	Roth Manifold Cabinet, free-standing 1050 Weight: 40,0 kg Volume: 152,0 dm³	ea.	1/7	046219.272
	Drip Tray for Manifold cabinets			
	Drip Tray for 550 mm cabinets	ea.	1	046219.305
	Drip Tray for 800 mm cabinets	ea.	1	046219.308
	Drip Tray for 1150 mm cabinets	ea.	1	046219.310
	Through pipes for 10,5-12 mm tubes	ea.	1	046297.802
	Through pipes for 15-18 mm tubes	ea.	1	046297.808
	Through pipes for 20 mm tubes	ea.	1	046297.820
	Roth Inspection Hatch Built in 1 mm steel plate with lockable door. Made in white varnish.			
	Roth Inspection Hatch 405 x 460 mm Weight: 2,16 kg Volume: 27,6 dm³	ea.	1	046297.714
	Roth Inspection Hatch 605 x 460 mm Weight: xx,x kg Volume: xx,x dm³	ea.	1	046297.716

Fittings and spareparts

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	FITTINGS **Elbow 16 mm x 16 mm pex**	 ea.	 1	 045120.016
	Transition 10,5 mm pex x ½" nipple **Transition 20 mm pex x ½" nipple** **Transition 20 mm pex x ¾" nipple** **Transition 16 mm pex x ½" nipple**	ea. ea. ea. ea.	1 1/25 1/25 1/25	045160.010 045160.239 045160.246 045162.189
	Transition 20 mm pex x ¾" connector **Transition 16 mm pex x ½" connector**	ea. ea.	1/25 1/25	045165.246 045166.189
	Straight joint 10,5 mm pex **Straight joint 20 mm pex** **Straight joint 16 mm pex**	ea. ea. ea.	1/125 1 1	045170.010 045170.020 045171.016
	FH hand regulated valve ½" x 20 mm pex **FH return valve ½" x 20 mm pex**	ea. ea.	1 1	401962.220 401966.220
Spareparts to the ShuntUnit				
	Thermostat for Shuntunit 20-60°C	ea.	1	466212.730
	Thermometer for Shuntunit 0-100°C	ea.	1	466212.740
	Supply valve for Shuntunit 1/2"	ea.	1	466212.746

Fittings and spareparts

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Presetting/Control valve for Shuntunit	ea.	1	466212.756
	Lever for Shuntunit	ea.	1	466212.750
	Air vent for Shuntunit 3/4"	ea.	1	466212.758
	Automatisk luftudlader til Shuntunit	ea.	1	466212.753
	Tools for flowcontrol/air vent for Shuntunit	ea.	1	466212.760
	Pump for Roth ShuntUnit 15/60, ErP 2015 ready	ea.	1	WI1000.000

Spareparts to old models of units and shunts

	Top piece for FH unit, models up to 2005	ea.	1	401975.808
	Top key for replacing top piece	ea.	1	401975.828

Fittings and spareparts

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth contr. valve for FH unit 1”, Type Gia **Roth preset. valve for FH unit GV-unit 1”, Type Gia**	ea. ea.	1 1	401975.838 401975.848
	Lever for FH Manifold Cab., Type Gia	ea.	1	401975.901
	Roth thermometer for tee	ea.	1	401979.033
	Roth thermo motor for Gia.	ea.	1	466275.524
	Hose connection 18 x 16/12 mm pex, Gia **Hose connection 18 x 20/16 mm pex, Gia**	ea. ea.	1 1	046598.316 046598.320
	Cabinet for dual-hose shunt	ea.	1	046297.200
	Straightway 1/2” valve for FH shunt w/electric control, models up to 2007	ea.	1	403462.004
	Thermostat for shunt with thermostatic valve 20-55o, models up to 2007	ea.	1	403466.001
	Check valve for FH unit, models up to 2007	ea.	1	466210.808

Fittings and spareparts

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Flow valve for shunts with thermostatic contr. 1/2", models up to 2007 **Flow valve for shunts with thermostatic contr. 3/4", models up to 2007**	ea. ea.	1 1	MM5000.029 MM5000.037
	Roth Plug with run-off and ventilation Used at the end of Floor Heating Unit if no floor heating shunt is installed. Weight: 0,1 kg Volume: 0,05 dm ³ Until year 2010	ea.	1	401974.838
	Roth Flow Meter, ½" nipple Flow meter for Roth Floor Heating Unit. Year 2005-2010	ea.	1	401974.894
	Roth Bottom Piece for Flow Meter This bottom piece should be used if a flow meter is desired for the floor heating units 401974.002 - 401974.012, Year 2005-2010	ea.	1	401974.896
	Roth Control Valve Control valve for floor heating unit for replacement. 2005-2010 models	ea.	1	401974.904
	Roth Presetting Valve Presetting valve for floor heating unit for replacement. 2005-2010 models	ea.	1	401974.914
	Roth FH Jig Attachment set for floor hearing unit. Year 2005-2010	set	1	RW1000.071
	Roth Hexagon Nipple 1" Only used if two floor heating units are to be connected in extension of one another. Weight: 0,3 kg Volume: 0,3 dm ³	ea.	1	048245.208

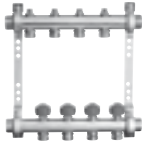
Fittings and spareparts

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth NOVA+ 5 channel Control Unit **Roth NOVA+ 10 channel Control Unit** 24 V Control Unit for controlling heating requirement. The system consists of a Control Unit to which 1-5/1-10 Roth NOVA+ room thermostats can be connected as needed, as well as an Operating Unit for programming the system. The control unit can be connected to a max. of 10 / 15 thermo motors, though no more than 2 per outlet. Weight: 0,70 kg Volume: 1,20 dm³	ea. ea.	1 1	466392.005 466392.010
	Roth NOVA+ Operating Unit Wireless Operating Unit with built-in thermostat for programming the desired comfort and heat savings settings. Weight: 0,16 kg Volume: 1,98 dm³	ea.	1	466392.020
	Roth NOVA+ Room Thermostat, standard Wireless Room Thermostat for individual room temperature adjustment. The night reduction program requires an Operating Unit. Weight: 0,11 kg Volume: 1,14 dm³	ea.	1	466392.100
	Roth NOVA+ Room Thermostat, display Wireless Room Thermostat with a display for individual room temperature control. The night reduction program requires an Operating Unit. Weight: 0,12 kg Volume: 1,14 dm³	ea.	1	466392.120
	Roth NOVA+ Room Thermostat, institution Wireless Room Thermostat for individual room temperature adjustment. There is no direct access for adjusting the temperature on the room thermostat. Weight: 0,11 kg Volume: 1,14 dm³	ea.	1	466392.110
	Roth NOVA+ Room Thermostat, IR Wireless Room Thermostat with a display for individual room temperature control. The night reduction program requires an Operating Unit. Infrared measurement of floor temperature with options for max. and min. temperatures. Weight: 0,12 kg Volume: 1,14 dm³	ea.	1	466392.130
	Roth NOVA+ Repeater Signal amplifier as required by the building material or design. Max. range: 30 meters Weight: 0,30 kg Volume: 1,14 dm³	ea.	1	466392.150

Fittings and spareparts

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth NOVA+ Antenna with 2 m wire Signal amplifier as required by the building material or design. Weight: 0,10 kg Volume: 1,02 dm³	ea.	1	466392.801
	Roth NOVA+ 5 m Extension Cable Used in conjunction with the NOVA+ Antenna as needed. Weight: 0,10 kg Volume: 1,02 dm³	ea.	1	466392.805
	Roth Thermo motor Used for Roth Manifold and Roth Nova+ Control unit. 24 V NC Weight: 0,1 kg Volume: 0,3 dm³	ea.	1	466275.424

Quick Calculation – Floor Heating
Touchline Wave - Wireless regulation



			1 circuit	2 circuits	3 circuits	4 circuits	5 circuits	6 circuits	7 circuits	8 circuits	9 circuits	10 circuits	11 circuits	12 circuits
1	**Roth Floor Heating Unit**													
	Floor heating units- 1", Hand controlled w/o manifold coupling with jig	Hvac No.	-	401973.002	401973.003	401973.004	401973.005	401973.006	401973.007	401973.008	401973.009	401973.010	401973.011	401973.012
		Number of units	-	1	1	1	1	1	1	1	1	1	1	1
	Roth Manifold Coupling 20 mm	Hvac No.	-	401974.820	401974.820	401974.820	401974.820	401974.820	401974.820	401974.820	401974.820	401974.820	401974.820	401974.820
		Number of units	2	4	6	8	10	12	14	16	18	20	22	24
	Roth End Piece with drain and ventilation	Hvac No.	-	401973.828	401973.828	401973.828	401973.828	401973.828	401973.828	401973.828	401973.828	401973.828	401973.828	401973.828
		Number of units	-	1	1	1	1	1	1	1	1	1	1	1

			1 circuit	2 circuits	3 circuits	4 circuits	5 circuits	6 circuits	7 circuits	8 circuits	9 circuits	10 circuits	11 circuits	12 circuits
2	**Roth Touchline Wave Wireless regulation**													
	Roth Thermo Motor 24V	Hvac No.	-	466275.424	466275.424	466275.424	466275.424	466275.424	466275.424	466275.424	466275.424	466275.424	466275.424	466275.424
		Number of units		2	3	4	5	6	7	8	9	10	11	12
	Touchline™ Thermostat, display, white	Hvac No.	-	466393.100	466393.100	466393.100	466393.100	466393.100	466393.100	466393.100	466393.100	466393.100	466393.100	466393.100
		Number of units		2	3	4	5	6	7	8	9	10	11	12
	Touchline™ 4 channel control unit	Hvac No.	-	466393.004	466393.004	466393.004	-	-	-	-	-	-	-	-
		Number of units		1	1	1	-	-	-	-	-	-	-	-
	Touchline™ 8 channel control unit	Hvac No.					466393.008	466393.008	466393.008	466393.008				
		Number of units	-	-	-	-	1	1	1	1	-	-	-	-
	Touchline™ 12 channel control unit	Hvac No.									466393.012	466393.012	466393.012	466393.012
		Number of units	-	-	-	-	-	-	-	-	1	1	1	1

			1 circuit	2 circuits	3 circuits	4 circuits	5 circuits	6 circuits	7 circuits	8 circuits	9 circuits	10 circuits	11 circuits	12 circuits
	Shunt													
3	Roth Mini Shunt, wireless (Not with Touchline)	Hvac No.	466210.301	-	-	-	-	-	-	-	-	-	-	-
		Number of units	1											
	Roth Floor Heating Shunt with thermostatic valve plus an Alpha2 L 15-60 pump	Hvac No.	-	466210.040	466210.040	466210.040	466210.040	466210.040	466210.040	466210.040	466210.040	466210.040	466210.040	466210.040
		Number of units	-	1	1	1	1	1	1	1	1	1	1	1

			1 circuit	2 circuits	3 circuits	4 circuits
	Roth Shuntunit					
1	Roth ShuntUnit for 1 circuit	Hvac No.	466212.110			
		Number of units	1	-	-	-
	Roth ShuntUnit for 2 circuits	Hvac No.		466212.120		
		Number of units	-	1	-	-
	Roth ShuntUnit for 3 circuits	Hvac No.			466212.130	
		Number of units	-	-	1	-
	Roth ShuntUnit for 4 circuits	Hvac No.				466212.140
		Number of units	-	-	-	1
	Roth Manifold Couping 20 mm	Hvac No.	401974.820	401974.820	401974.820	401974.820
		Number of units	2	4	6	8

			1 circuit	2 circuits	3 circuits	4 circuits
	Roth Touchline Wave Wireless regulation					
2	Roth Thermo Motor 24V	Hvac No.	466275.424	466275.424	466275.424	466275.424
		Number of units	1	2	3	4
	Touchline™ Thermostat, display, white	Hvac No.	466393.100	466393.100	466393.100	466393.100
		Number of units	1	2	3	4
	Touchline™ 4 channel control unit	Hvac No.	466393.004	466393.004	466393.004	466393.004
		Number of units	1	1	1	1

Own Notes

Own Notes

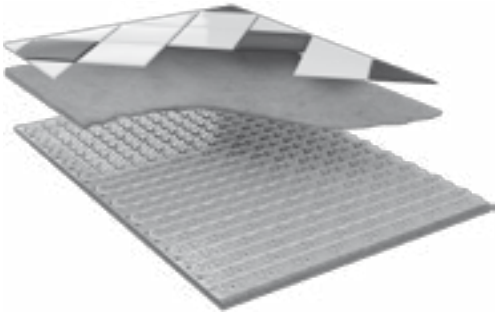
Roth Floor Heating System

Planning and Project Design

... living full of energy!

Low clearance floor heating...

... embedded in Flow

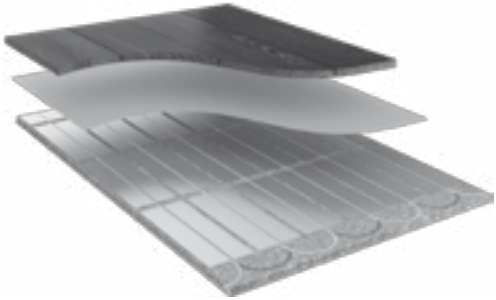


Roth Clima Comfort™ System

Roth Clima Comfort™ system with 10.5 mm X-Pert S5® pipe. The ideal system for renovation and new structures where the construction height is a determining factor. Roth Clima Comfort™ can be used with all types of floor coverings.

- Fast installation
- Low clearance (17 mm)
- Efficient heat distribution
- Fast adjustability

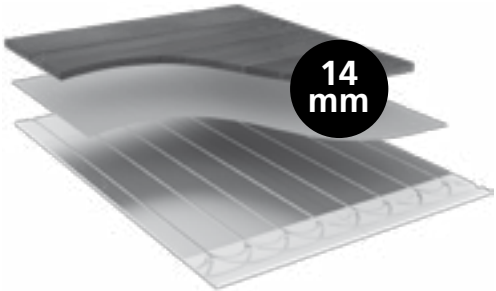
... in a tier of beams



Roth Chipboard Floor

Heat distribution plates made of chipboards with grooves -- for 16 mm X-PERT S5® pipes or 16 mm Alu-LaserPex® pipes. The grooved chipboards are laid perpendicular to the tier of beams,
replacing the regular 22 mm chipboards. Heat distribution plates are inserted into the grooves, keeping the pipes in place and ensuring efficient heat transfer to the floor covering. A turn plate should be used
for pipes that turn. The insulation should be placed directly underneath the chipboards.

... floating floors

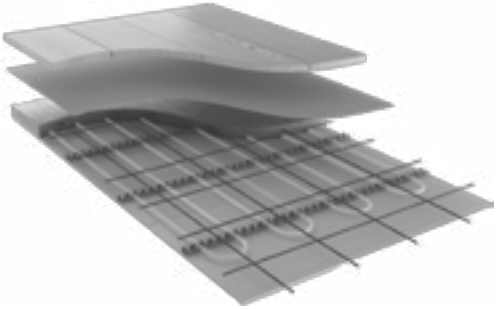


Roth Compact System®

Roth Compact System® -- for 10.5 or 16 mm X-PERT S5® pipes. The Compact plates consist of polystyrene on the back side and aluminium on the top. The aluminium plates ensure optimal heat distribution for the floor. The plates are glued and screwed directly onto the structural floor, which must be solid, smooth, and clean. Because of the high density of polystyrene, clinkers can be glued directly on the Compact plates, thus minimizing the overall height. For this reason, the system is highly useful for renovation jobs.
Of course, wooden floors can also be placed on top of the Roth Compact System®. A thin board felt or similar material is simply placed between the wooden floor and the Compact System®. The Roth Compact System® for 10.5 and 16 mm floor heating pipes has a clearance of 14 mm and 24 mm, respectively. For both systems, the floor heating pipes have a c/c distance of 150 or 300 mm.
The presence of polystyrene in the system provides added insulation, thereby reducing the heat loss down into the structure. Since the floor covering (the clinks or the wooden floor) is very close to the floor heating pipes, the system provides for a fast reaction time. Special installation issues apply to use in damp rooms, and certain rules for damp rooms need to be followed.

... and for all floor structure types!

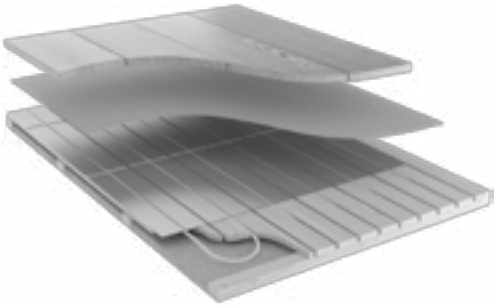
... embedded in concrete



Roth Mounting Rail

Floor heating pipes attached to insulation with mounting rails -- for 10.5 mm, 12 mm, 16 mm, and 20 mm PEX and X-PERT S5® pipes.
The mounting rails are attached to the existing insulation using fastening clips. The pipes are pressed into the mounting rails and are kept in place with a the proper distance between the pipes.
It is important that the insulation meet the requirements, cf. Danish Building Code.

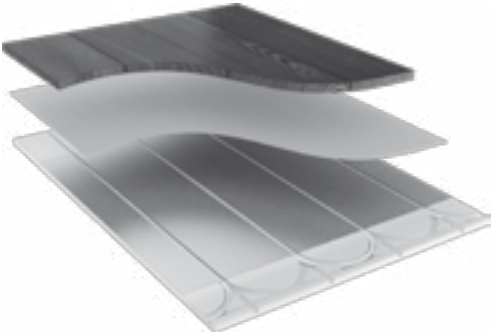
... in a tier of beams



Roth Single-grooved heat distribution plate for laths

Roth Single-grooved heat distribution plates for laths are specially designed in such a way that the floor heating system does not increase the overall height compared to a normal floor structure. Heat distribution plates for laths are available for 16 and
20 mm X-PERT floor heating pipes. The heat distribution plates are mounted on the lath, which is attached to joists or the tier of beams. The distance between the lath boards should be approx. 19 mm for 16 mm pipes and approx. 23 mm for 20 mm pipes. There should be a centre distance of 300 mm between the slots where the pipes are to be placed. The Roth X-PERT S5® or Roth Alu-LaserPlus™ pipes are pressed into place in grooves that run lengthwise in the heat distribution plates. The grooves on the plates are designed in such a way as to lock the pipe into place, thus serving as "pipe holders".

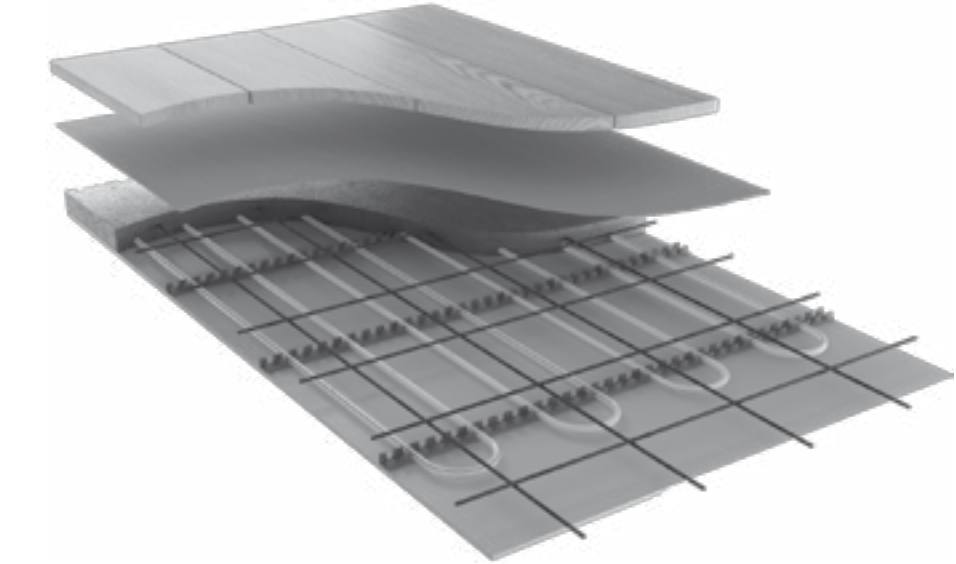
... floating floors



Roth Combi Plates

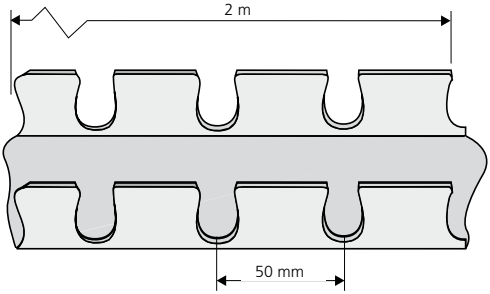
Combi plates in concrete slabs, floor partitions, etc. -- for 20 mm X-PERT S5® pipes.
The plates are equipped with polystyrene on the back side and are laid directly on the level underlying floor in such a way as to cover the entire surface. Turn plates are used in the ends, and the sides are filled with regular polystyrene. The pipes are pressed into the plates. A suitable wooden floor is then installed with a min. thickness of 19 mm. In the case of thin laminated floors, first install a chipboard floor with a min. thickness of 16 mm.
Between the heat distribution plates and the next layer, either thin board felt or foam is installed.

Embedded in concrete with a mounting rail

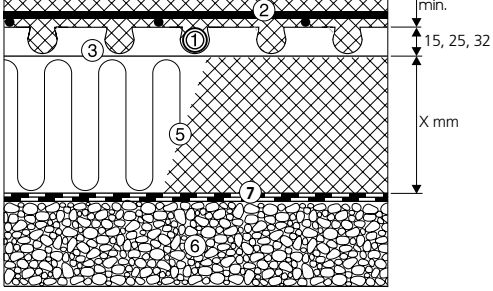


Technical description

The Roth Mounting Rail is fastened to the existing insulation using fastening clips, or it is cast in concrete using a nail gun. The pipes are pressed into the mounting rails and are kept in place with the proper distance between the pipes. By the ground, at a minimum an insulation type is required that can meet the requirements of the Danish Building Code. A reinforcement mesh is placed on top of the pipes to strengthen the concrete layer. The mounting rail is 2 meters long with grooves for every 50 mm for fastening 10.5 mm, 16 mm, or 20 mm X-PERT® pipes, as well as 20 mm LinPex® pipes. The 50 mm centre distance between the grooves allows for great flexibility when choosing centre distance between the pipes. The mounting rails should be placed in extension of one another. There should be a mutual distance of 1 m between the rows.



Rebuilding



1. Roth Floor Heating Pipes 10.5 mm, 16 mm, or 20 mm
2. Reinforcement mesh
3. Mounting rail
4. Concrete, minimum 50 mm
5. Insulation or concrete
6. Capillary breaking layer
7. Varpor seal.

Embedded in concrete with a mounting rail

Installation

1. You may also place edge insulation along the outer walls and partitions.

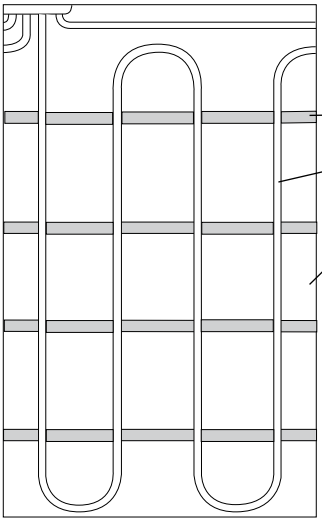
2. The Roth Mounting Rail is fastened to the existing insulation using fastening clips, or it is cast in concrete using a nail gun. The mounting rails are placed with a mutual distance of 1 m. When turning the pipes, a distance of 0.3 m is maintained.

3. The pipe is pressed into the mounting rails. The 50 mm centre distance between the grooves allows for great flexibility when choosing centre distance between the pipes. Installation pattern (see drawing).

4. The pipe installation begins by connecting the flow to the floor heating manifold (don't forget the pipe bend). For 10.5 mm pipes, the max. pipe length is 50 m; for 16 mm pipes, the max pipe length is 90 m; and for 20 mm pipes, the max length is 120 m.

5. Connect the return pipe to the corresponding valve on the floor heating manifold.
Label the system so that it is clear which circuit(s) supplies/supply which room(s).
Follow the floor heating manifold instructions regarding pressure testing, adjustment, as well as operation and maintenance. Remember that the floor heating pipes become stiffer as the temperature drops, so keep them warm until they are installed.

6. After this, casting can take place and the desired floor covering can be installed. For wooden floors, remember to install a thin board felt or floor felt.. If a varpor barrier has not been installed deeper into the floor structure, a vapour barrier is placed below the floor covering.



Accessories

Roth X-PERT S5® 20 mm, á 120 m HVAC nr. 087207.220
Roth X-PERT S5® 20 mm, á 240 m HVAC nr. 087207.240
Roth X-PERT S5® 20 mm, á 600 m HVAC nr. 087207.249
Pipe consumption per m², c-c 300 mm 3,3 meter

Roth X-PERT® 16 mm, á 90 m HVAC nr. 087207.216
Roth X-PERT® 16 mm, á 200 m HVAC nr. 087207.235
Roth X-PERT® 16 mm, á 650 m HVAC nr. 087207.237
Pipe consumption per m², c-c 200 mm 5 meter

Roth X-PERT® 10,5 mm, á 70 m HVAC nr. 087207.210
Roth X-PERT® 10,5 mm, á 200 m HVAC nr. 087207.230
Pipe consumption per m², c-c 150 mm 6,6 meter

Important!

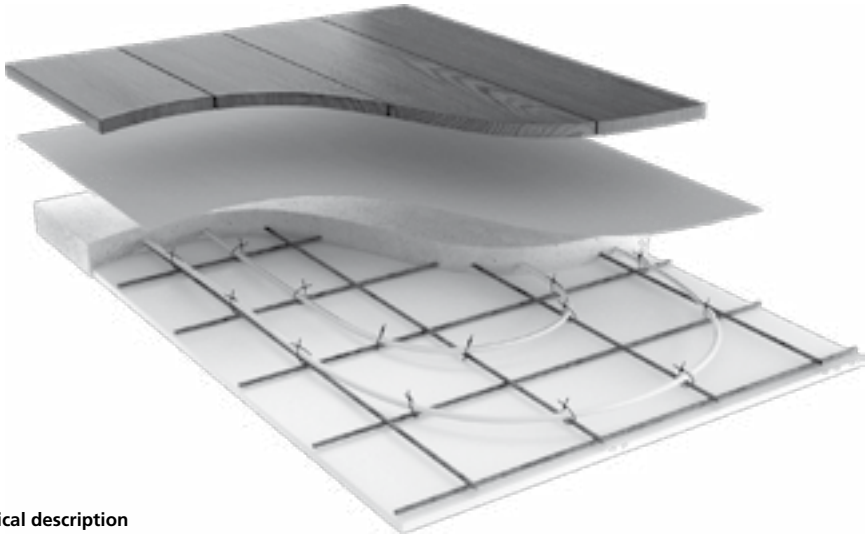
Remember that the concrete must be completely dry before installing the floor covering.

When turning on the floor heat, the flow temperature should preferably not exceed the surface temperature of the concrete by more than 5° C (41° F.). This ensures proper drying of the concrete.

In larger buildings, such as warehouses and industrial spaces, the concrete floor should be separated into smaller areas. An expansion joint should be made around each area. The floor heating pipes should cross the joint as little as possible; in other words, the pipes are installed within the expansion joints. If the pipe fits the joint, a casing pipe or insulation is placed approx.
around the floor heating pipe 20 cm on each side of the joint for protection.

It is important to have sufficient ground insulation to reduce downward heat loss. To be carried out pursuant to the Danish Building Code.

Embedded in concrete with steel wire ties



Technical description

Roth floor heating pipes are attached to the reinforcement mesh using steel wire ties. The reinforcement mesh works as a pipe support and contributes to strengthening the concrete. The reinforcement mesh must be raised approx. 10 mm from the underlying insulation. For this reason, a damp insulating layer should be placed imwithiately below the floor heating pipes.

Technical data

Roth Steel Wire Ties á 250 pieces
HVAC no. 087421.225
Measurements: ..... 150 mm
Material ..... Annealed steel wire 1 mm thick

Installation guide

1. Once the base has been cast, adjustments are made using stable gravel or similar material. The insulation – rock wool or polystyrene – is then placed on the entire floor.

2. A damp insulating layer is placed directly on top of the insulation.

3. A reinforcement mesh is placed in a suspended position approx. 10 mm from the underlying insulation.

4. Roth floor heating pipes are fastened onto the reinforcement mesh by using steel wire ties. If steel wire ties are not used, Jumbo clips or Clips can be used in stead.
These work as pipe support while raising the reinforcement mesh above the insulation. The centre distance between the pipes for 20 mm Roth floor heating pipes must not exceed 300 mm and are installed using the "bent return" method.
See illustration for installation.
Pipe consumption: 3.3 meters per m² at c-c 300 mm.

5. The hoses should be pressure tested at 10 bar (145 PSI) prior to embedding. If there is a frost risk, the test pressure water should be frost protected or flushed.

6. Roth floor heating pipes should not be exposed to strong sun light for more than approx. 8 days before installing.
In addition, exposed pipe ends above the floor should be protected or covered.

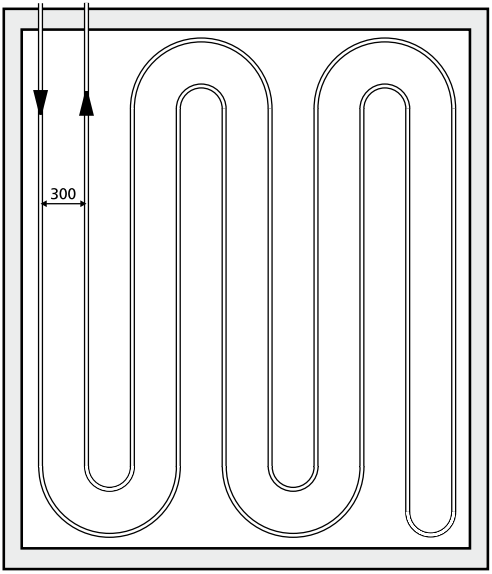
7. During casting, the floor heat should not be on. The concrete used for casting should be floating concrete with a min. strength of 15 NM/m².
If a vibrator is used, it must not come down and damage the pipes.

8. The concrete must have a thickness of 70 - 100 mm.

9. The concrete is levelled with the finished floor. It is very important for the floor covering to have close contact with the concrete floor to ensure good, steady heating.

Embedded in concrete w/ steel wire ties

Set



Roth steel wire ties are used for concrete floor constructions for fastening Roth Floor Heating Pipes to the reinforcement mesh. The steel wire tie is placed around the reinforcement mesh and the pipe. Next, insert the hook from Roth attachment tool,
HVAC no. 087393.250, through both holes and pull. The tie will then become twisted and keep the pipe fixed against the mesh.

Accessories

Roth X-PERT S5® 20 mm, 120 m
HVAC no. 087207.220

Roth X-PERT S5® 20 mm, 240 m
HVAC no. 087207.240

Roth X-PERT S5® 20 mm, 600 m
HVAC no. 087207.249

Roth Steel Wire Ties á 250 ea..
HVAC no. 087421.225

Roth Tool for steel wire ties with screw
HVAC no. 087393.250

Important!

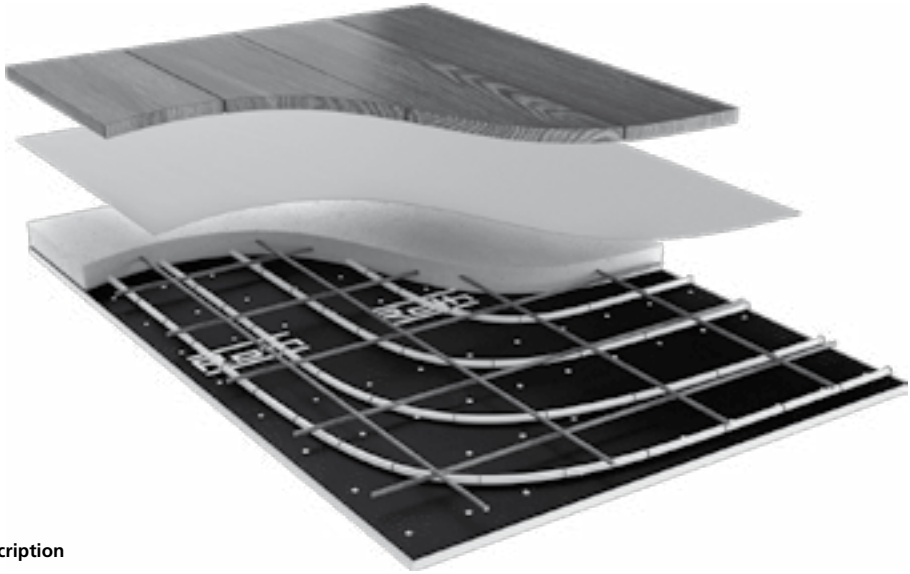
Remember that the concrete must be completely dry before installing the floor covering.

When turning on the floor heat, the flow temperature should preferably not exceed the surface temperature of the concrete by more than 5o C (41o F.). This ensures proper drying of the concrete.

In larger buildings, such as warehouses and industrial spaces, the concrete floor should be separated into smaller areas. An expansion joint should be made around each area. The floor heating pipes should cross the joint as little as possible; in other words, the pipes are installed within the expansion joints. If the pipe fits the joint, a casing pipe or insulation is placed approx.
around the floor heating pipe 20 cm on each side of the joint for protection.

It is important to have sufficient ground insulation to reduce downward heat loss. To be carried out pursuant to the Danish Building Code.

Embedded in concrete with systemboard/pipe clips



Description

The Roth installation tool for pipe clips makes it easier to install the floor heating pipes. Attach the pipe clips to the installation tool, and you are ready to install the pipes. Hold the tool above the desired location and press down on the handle. The clip is pressed into the insulation, thus keeping the pipe in place. The clips must be pressed into the insulation at an approximate distance of 0.5 meters. The pipe clips fit Linpex® and X-PERT™ floor heating pipes.

Technical data

Roth installation tool for pipe clips.
HVAC no. 339654.229

Roth pipe clips, length 43 mm
HVAC no. 339654.220

Roth pipe clips, length 58 mm
HVAC no. 339654.221

Systemboard 25-2 EPS, 25 mm of clearance
HVAC no. 338285.025

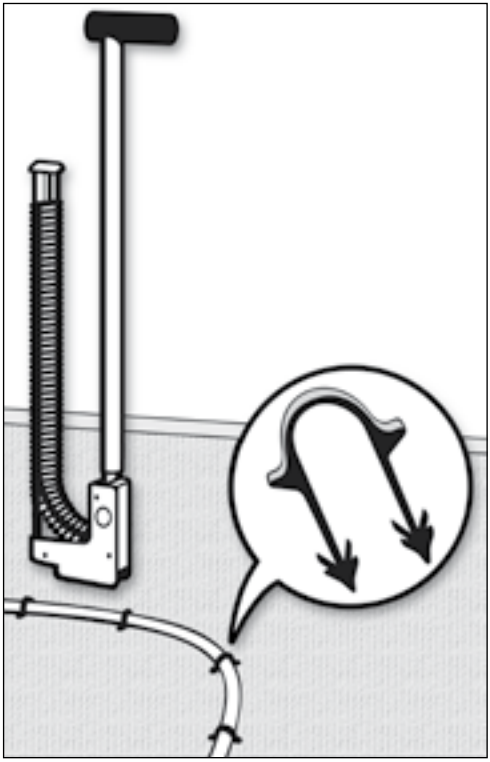
Systemboard 30-2 EPS, 30 mm of clearance
HVAC no. 338285.030

Systemboard in a roll 25-2 EPS, 25 mm of clearance
HVAC no. 339285.225

Systemboard in a roll 30-2 EPS, 30 mm of clearance
HVAC no. 339285.265

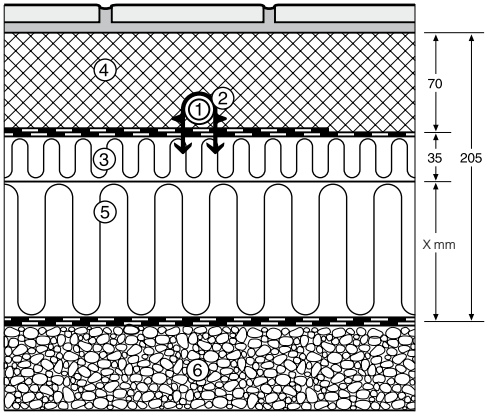
Data	Systemboard 25-2	Systemboard 30-2	Systemboard in a roll 25-2	Systemboard in a roll 30-2
HVAC no.	339285.025	339285.030	339285.225	339285.265
Measurements, in mm	1000x1000x25	1000x1000x30	1000x12000x25	1000x10000x30
Thermal conductivity W/mK	0,045	0,040	0,045	0,045
Soundinsulation in dB, DIN 4109	28	28	28	29
Moisture barrier	DIN 18560	DIN 18560	DIN 18560	DIN 18560
Max overall load kN/m²	4,0	5,0	4,0	4,0
Adhesive overlap In mm	30	30	18	18
Package in m²	15,0	15,0	12,0	10,0

Embedded in concrete with pipe clips

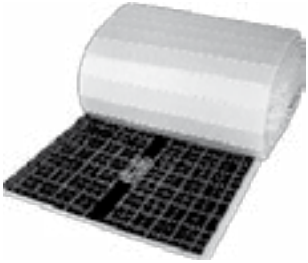


Use extra-long pipe clips!

Structural outline



1. Roth Floor Heating Pipe
2. Roth pipe clips
3. Roth system board or reg. insulation
4. Concrete
5. Insulation
6. Capillary breaking layer



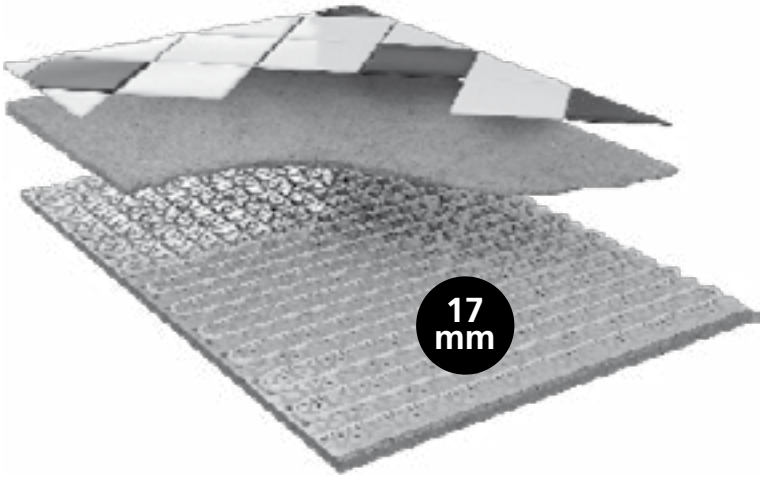
Important!

If the floor heating is used drying the concrete, use a low flow temperature, typically 5 degrees C. higher than the temperature of the concrete. Always consult with the concrete supplier before commencing drying.

In larger edifices, such as warehouses and industrial buildings, the floors are separated into smaller areas by using expansion joints.
In places where the floor heating pipes cross these joints, they need to be protected against the movements of the concrete surfaces. This can be done by attaching a piece of Roth casing pipe.

Be aware of the stricter insulation requirements when there is floor heating on the ground slab and closely follow the building regulations in effect and any other applicable regulations.

Roth Clima Comfort® System



Areas of use

- Renovation jobs
- New construction
- For floors and/or walls

The Roth Clima Comfort™ is a system with a low overall height of only 17 mm, intended for installation on existing or new underlying layers. The system is particularly suitable for renovation of the older housing stock.

The Clima Comfort™ system can be installed on floors as well as walls. This way it can be used as a "radiator" in rooms where the floor area is not large enough to cover the heat loss for the room.

The structure has a low weight and bulk density, resulting in quicker reaction time than a traditional cast structure.

Clima Comfort™ is fast and easy to install, a result of the specially developed system board and the special, self-levelling filler.

Technical description

The Roth Clima Comfort™ System
can be installed where a quick and safe installation with low overall height and fast-adjusting floor heating system are desired. The underlying layer must be dry, rigid, air tight, and stable. When installing on existing floor, be aware of the potentially greater downward heat loss into the structure.
When installing for new construction, the structure must meet the heat insulation requirements according to the applicable building code.
The Clima Comfort™ system consists of several important system components.

Roth Clima Comfort™ system board
Transparent, vacuum-shaped synthetic board with high ultimate stress. The transparent board ensures that the pipes are kept in place and makes it possible to control that the filler has properly entered all areas.
The board comes equipped with an adhesive back side, allowing for fast, easy, and safe installation on the underlying layer. Installation of pipe with c/c 75 mm at 90o and c/c 100 mm at 45o. At the same time, the board is designed with a 22 mm overlap that ensures that
the plates "stick" together.

Roth X-PERT S5® 10,5 x 1,3mm pipe
The flexible 5-layer X-PERT pipe ensures fast and easy installation in the system board.
The 5-layer technology allows for a pipe with high mechanical strength. Maximum hose length: 60-80 m. Max. Operating temperature 70^{O} C (158^{O} F.) at 6 bar (87 PSI).

Roth Clima Comfort™ edge insulation
Edge insulation is used to ensure limited contact between the filler and surrounding structures.

Roth Clima Comfort™ FLOW
Ready-mixed, fast-hardening, self-adjusting, fibre arwith filler that is especially used for re-casting heating pipes where only a very low overall height is possible.

Additional components
The system is used in conjunction with the Roth Floor Heating Manifold and ¾" EURO connectors for 10.5mm X-PERT S5® pipes.
For the manifold outlet, a sub-manifold is available that makes it possible to connect two hoses to one outlet on the manifold. The program also features a 10.5 mm straight-through joint, as well as a 10.5 mm ½" nipple transition.

Roth Clima Comfort® System

Technical data

Roth Clima ComfortTM system board
HVAC no. 339298.114

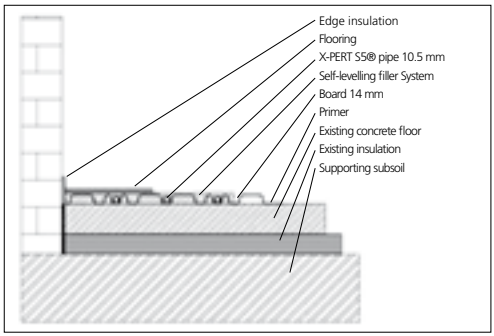
Contents:
5 System Boards (equivalent to 3.92 m²) L = 1072 mm, W = 772 mm, H = 14 mm

Material: ..... PET
c/c measurement floor heating pipe, 75 mm, pipe consumption 13,3m/m².

Roth Clima Comfort™ FLOW
HVAC no. 339349.825
Contents: ..... 25 kg
Consumption ..... 1.7 kg/mm per m² (29 kg/m²)
Available as ready-mixed powder ready to be combined with water. Use within 30 min. after mixing. Installation temperature: min. 7° C (44.6° F.).
May be walked on after approx. 2 hours at 20° C (68° F.). Tiles can be laid after approx. 5 hours at 20° C (68° F.).
All tile types can be used. A dense layer can only be installed after 5 days; however, this time frame can be extended considerably at lower temperatures or higher air humidity. A moisture inspection should be perforwith before any further treatment. The setting time is two weeks before the floor heat can be turned on!
It is recommended to use a primer for better attachment to the underlying layer. Follow the label instructions carefully. A wet room membrane can be placed imwithiately onto of the Clima Comfort™ FLOW. Always follow the manufacturer's instructions.

Roth Clima Comfort™ edge insulation
HVAC no. 339259.025
Contents: 25m
H = 80mm, W = 8mm
Special foam with a PE film welded on to it. On back, equipped with slots and adhesive strips for attachment.

Installation guide
Installation of the system should be perforwith by professionals, both in terms of HVAC work, pouring of molten metal, and floor installation.
Most importantly, make sure that the underlying layer is properly in place. It should be level, dry, rigid and air tight, stable, and free of impurities
such as oil, dust, wax, paint, etc. There cannot be any layer partition farther down into the structure that is not rigid and air tight. Cracks etc. must be repaired accordingly before starting the installation. If there is a danger of rising moisture, the underlying layer must be prepped.
Thoroughly vacuum the underlying layer. Any uneven surfaces can be sanded/cut off. It is recommended to prime the underlying layer for proper adhesion.



The above illustration shows a section of the construction perforwith on a concrete slab, which can be either new or old. When installing on existing floors, be aware that there can be a greater downward heat loss into the structure. When installing for new construction, the structure must meet the heat insulation requirements according to the applicable building code.

The edge insulation can be placed along all walls and other structures such as columns, etc. Attach the insulation to the building parts, making sure that it gets all the way into the corners. Likewise, make sure that the PE film is placed on the floor.

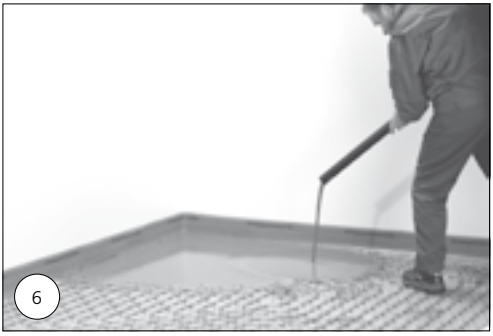
Remove the film from the adhesive back side. It is important to prevent dirt from getting into the glue before sticking the glue against the underlying layer.

Roth Clima Comfort® System

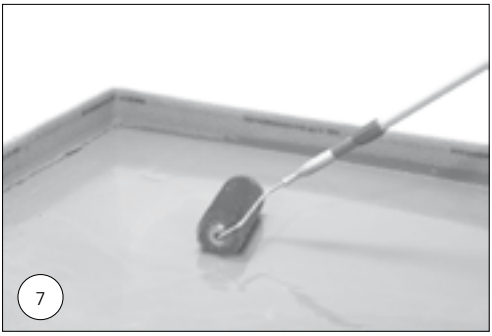
Start laying the system boards in a corner of the room. Make sure that the PE film from the edge insulation gets down underneath the system board. Press the board tight against the underlying layer by using your hands or by stepping on it.

Make sure that the next board is properly fastened (overlap) to the board that is already secured before pressing the board tight against the underlying layer. The boards can be easily trimwith by using a pair of scissors or a jigsaw.

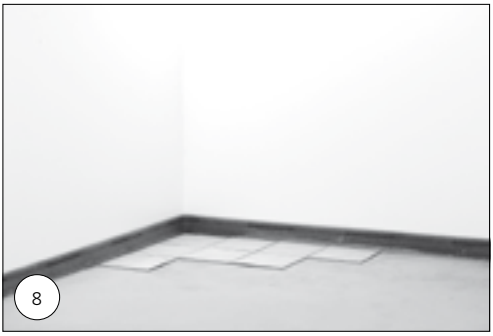
Start installing the X-PERT S5® 10.5 mm pipe. The installation pattern can be as shown or traditional with reverse return. Carefully step on the pipes to press them into the boards. Installation can take place both perpendicular to the boards and at a 45° ankle.



The filler is mixed in using the proper proportions and is poured onto the structure.
Pour the filler in such a way as to achieve a 3 mm coverage on top of the system board (total thickness 17 mm). Pouring temperature for room and floor: min. 10° (50° F.).



It is highly important that the filler gets all the way into the holes in the system board. The filler is easily worked carefully into the plates by using a rubber cylinder, which also helps to more quickly smoothen out the filler. Let the filler harden properly. After 2 hours at 20° C. (68° F.), you may walk on the floor.

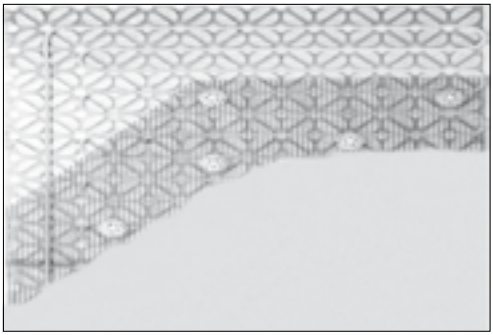


After 5 hours at 20° C. (68° F.), you can start installing clinkers. All types of slab adhesives can be used.
Of course, if the room is a damp room it will need to be damp-room treated. This can be done directly on top of the poured filler, potentially by using a primer as a supplement.
Always follow the adhesive and damp room product manufacturer's instructions.

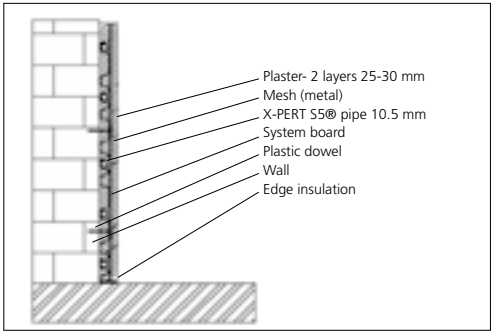
Roth Clima Comfort® system

Where the floor covering is a wooden floor, at least 48 hours should go by before starting installation; you need to be sure that all the moisture from the filler has evaporated.
Cardboard or foam is placed below the wooden floor, and it may also be necessary to supplement with a varpor barrier.
Always follow the wood floor manufacturer's instructions.

Special instructions for wall installation



The above illustration shows the structure built on a wall. As with floor structures, it is important that the underlying layer is properly installed (see above).
It is recommended to prime the underlying layer for proper adhesion.

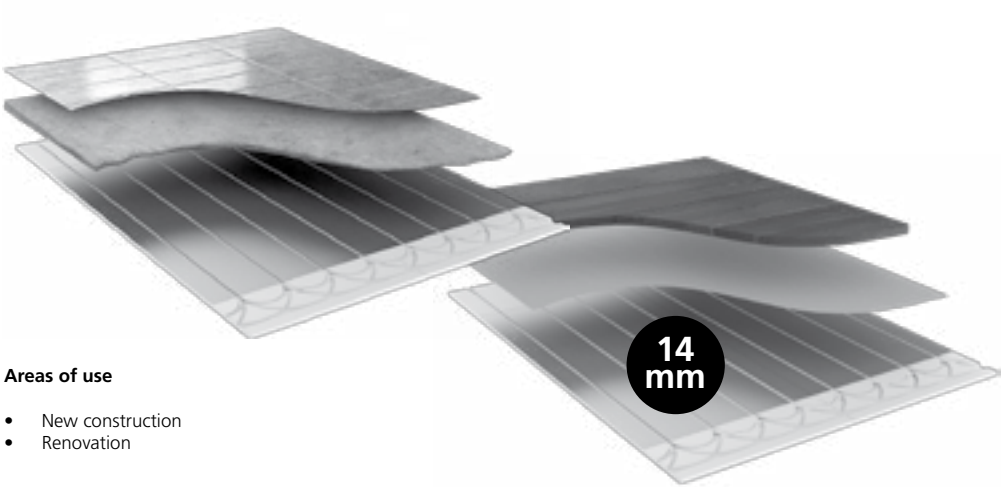


The system board is attached against the wall, and the pipe is pressed into the board. A metal mesh is attached on top of the board and is fastened to the wall using a plastic dowel. The plaster is applied in two layers. Of course, it is important that the filler gets all the way into the holes in the system board.

We reserve the right to engineering changes without prior notice.

Roth Compact® System

For installation on a load bearing sub-layer



Areas of use

- New construction
- Renovation

The Roth Compact® has been specially developed for the installation of floor heating where a quickly adjustable system with a low overall height is desired. The system is also particularly suited for renovation jobs.

The Roth Compact® system anywhere with a good and stable sub layer of wood or concrete. The system can be completed using wood, rugs, or clinks. The clinks are glued directly on top of the system boards. Use Roth Compact® FLEX FIX to glue the system. This is a specially developed glue with high strength, adhesion, and flexibility.

The advantages of the Roth Compact® system can most easily be described as follows: simple installation, low overall height, high heat emission, fast adjustment, great comfort, can be used on most sub layers, optional floor covering, as well as superior quality.

Technical description

EPS density ..... 50 kg/m
Thermal conductivity ..... 0.032 W/m K
Max. overall load .....2,0 kN/m²

Roth Compact® system 14/10.5 and 24/16
HVAC no.: 339318.010/339318.024
Area covered: ..... 8.9 m²

Package contents:
10 Compact® system boards:
Measurements: . L=1220 mm, W= 610 mm, H=14 mm/24 mm
c/c measurements: ..... 152 mm

6 Compact® return boards:
Measurements: . L=202mm, W= 610 mm, H=14 mm/24 mm

12 Compact® conveyor boards:
Measurements: .. L=610mm, W= 101mm, H=14 mm/24 mm
Polystyrene density: ..... 50 kg/m³

Roth Compact® system 14/10.5
HVAC no.: 339318.006
Area covered: ..... 5,2 m²

Package contents:
5 Compact® system boards
6 Compact® return boards
12 Compact® conveyor boards

Pipe consumption per m²:
c/c 152 mm: ..... 6.5 meters (10.5 and 16 mm pipes)
c/c 304 mm: ..... 3.3 meters (16 mm pipes only)

Roth Compact® returnboards 14 /10.5 and 24 /16
HVAC no.: 339318.810/339318.824
Package contents: ..... 10 Compact® system boards:
Measurements: . L=202mm, W= 610 mm, H=14 mm/24 mm

Accessories
Roth Compact® FLEX FIX
25 kg each, for gluing system boards and coating:
HVAC no.: 339349.818
Roth Clima Comfort® FLOW
25 kg each, where there is a need to create a floor with a drop:
HVAC no.: 339349.825

Maximum pipe lengths for the Compact® system
Roth X-PERT S5® 10.5 x 1.3 mm, max. 60-80 m
Roth X-PERT S5® 16 x 2.0 mm, max. 90-110 m
Roth Alu-LaserPlus 16 x 2.0 mm, max. 90-110 m

Roth Compact® System

For installation on a load bearing sub-layer

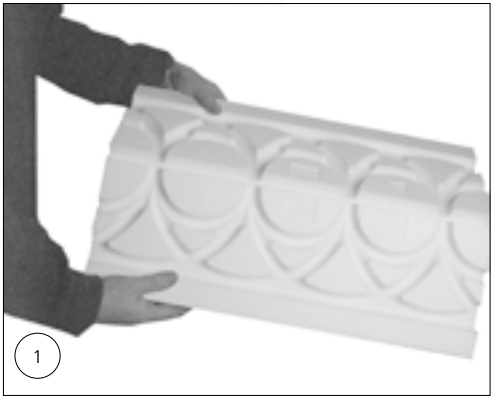
Important guidelines

Completely read the installation guide before commencing work.

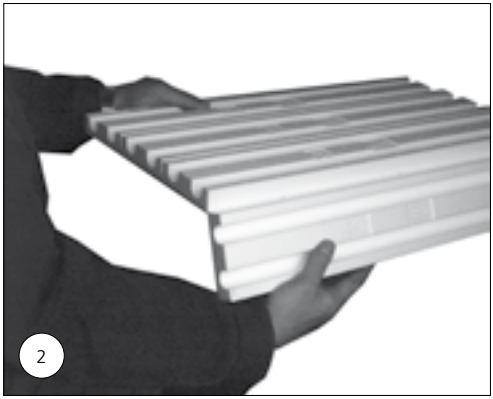
- The work must be done by, or in consultation with, a responsible HVAC technician.
- Temperature rating: -20o to +50o C (-4o to 122o F.).
- Throughout the installation (applies until the entire floor has been finished), the boards must have a min. temperature of +10ºC (50o F.).
- Throughout the installation, the boards cannot be exposed to direct sunlight if this poses a risk that the surface temperature might exceed +50o C. (122o F.) before the floor covering has been installed. If necessary, the floor can be covered by cardboard until the floor covering is in place.
- The Roth Compact® system can be installed on virtually all types of load bearing floor structures that have a smooth and uniform surface. The maximum allowed level variance for the floor covering is 1 - 2 mm per meter Subfloors containing vinyl, tiles, or PVC must be pre-approved by a floor technician if it is to be used as underlying layer.
- When installing on a sub layer of wood, the sub floor must be min. a 22 mm chipboard or a similar board.. The centre distance of the underlying beams cannot exceed 60 cm.
- When laying a tile floor on a wooden floor in a damp room, use a 19 mm (min.) construction veneer on joists with a max. distance of c-c 300 mm.. To be built according to the Danish Building and Research directive 200.
- Only Roth floor heating pipes may be used. We recommend X-PERT S5® Floor Heating Pipes or Alu-LaserPex® pipes.
- If a floating floor covering (parquet, laminated, etc.) is desired, the Roth Compact® system can be laid using a floating installation.
- In cases where tiles or clinks are placed directly onto the Roth Compact® system, all the boards will have to be glued to the subfloor.
- Use ONLY Roth Compact® FLEX FIX glue. Carefully follow the labelling instructions. Mixture ratio: approx. 6 litres of water for every 25 kg (1bag), though no more than 6.6 litres of water for every 25 kg. Roth assumes no responsibility if other types of glue are used.
- Take extra care that the underlying layer is completely clean and free from oil, grease, etc. It needs to be free from any loose plaster, slurry, and cracks. If the underlying layer is heavily absorbent, it is recommended to use a primer or to pre-water it before installing the Roth Compact® FLEX FIX. Glue consumption: minimum 4 kg/m2. A primer should be applied whenever it is considered necessary in order to achieve the best possible adhesion to the underlying layer, such as in the case with old concrete, plasterboards, and wooden underlying layers.
- When the tiles are glued to the Roth Compact® plates, again ONLY use Roth Compact® FLEX FIX at the mixture ratio mentioned above. Glue consumption: minimum 4 kg/m2. Before applying the glue, the boards need to be vacuuwith and dried with an ammonium chloride solution at a mixture ratio of 3-4 caps for every 10 litres of water.
- Carefully follow the mixture ratio of water in the glue. If too much water gets into the glue, the adhesion ability will be reduced, causing the glue to fail to attach to the aluminium plates properly.
- DO NOT use Roth Compact® FLEX FIX as a filler. Instead, use Roth Clima Comfort™ FLOW filler at a minimum thickness of 10 mm. The compact boards must always be priwith when installing Roth Clima Comfort™ FLOW.

Installation guide

First of all, make sure that the subfloor where the Compact system is to be installed is stable and bearing. Furthermore, it needs to be fully cleansed and completely level. Distribute and install return boards and conveyor boards.



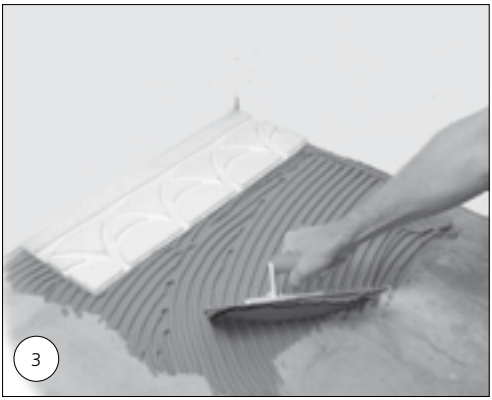
The return boards are available as double boards that are simply broken into two boards.



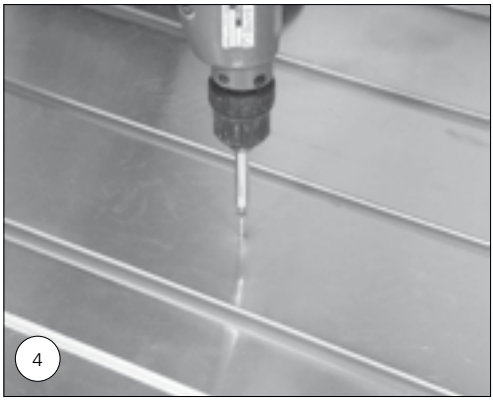
The conveyor boards are likewise available as assembled boards; however, they are easily broken into four boards.

Roth Compact® System

For installation on a load bearing sub-layer



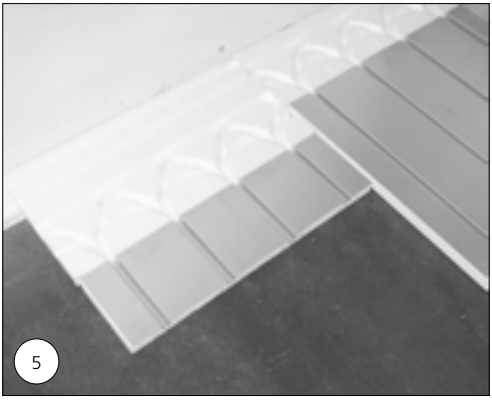
If you plan to place clinks or tiles directly onto the Compact plates, you will need to glue all the plates to the subfloor. When gluing, ALWAYS use Roth Compact® FLEX FIX. Always follow indications on the packaging and use a primer on the underlying layer if necessary.



In addition to glue, countersink screws can also be used measuring 4 x 50 mm. Approx. 35 screws are used per Compact plate and approx. 7 screws for return and conveyor boards, respectively.
The screws are not meant to replace the glue; they are intended as an extra safety when there is uncertainty about the condition of the subfloor.

Consumption of FLEX FIX

	Consumption/m²	Curved spatula
Glue between plates and subfloor	3-4 kg	5,5 x 10,5 mm
Tiles 30 x 30	5,0 kg	6,5 x 13,0 mm
Tiles 60 x 30/60	7,0 kg	10,0 x 15,0 mm



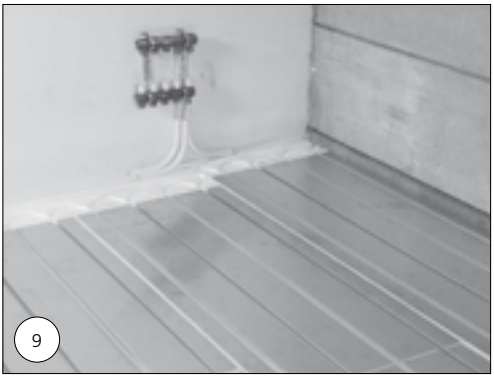
Installation of the plates begins by the first return board. When the first row meets the next return board, the Compact plate is cut. The excess plate is used as a start plate for the next row.

A jigsaw can be used for cutting the Compact plates. The plates are cut from the back side.

Roth Compact® System

The dovetails from the pipe grooves MUST be removed using a file.

Continue installing the plates. In the case of empty space against walls measuring more than 100 mm in width, conveyor boards can be used to fill the empty space.



Start the laying the pipes by installing the manifold. The pipe is connected to the outflow of the manifold (uppermost pipe).

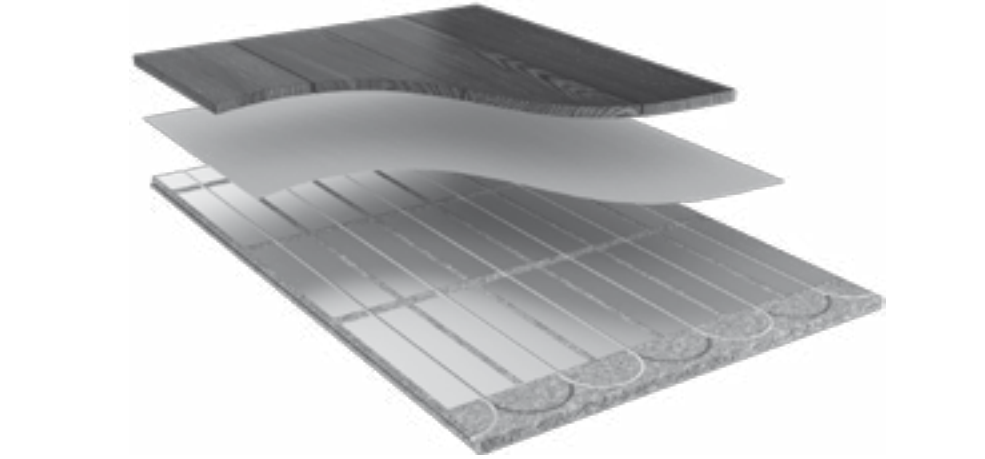
The pipes are installed according to the installation pattern. Make sure that the pipes are pressed all the way into the groove so they do not lie above the plate itself. This is to avoid noise and sound problems, especially when installing a floating floor covering.

Continue with the remaining hoses in the same fashion. Follow the respective instructions for pressure testing, ventilation, and adjustments before placing the floor covering.
In cases where parquet or laminated floor is installed, a damp insulating layer (0.2 mm thick) needs to be put in place to protect the floor covering against any humidity from below. Always follow the installation guide provided by the wood floor supplier.
With floor covering such as a rug or the like, a 13 mm plasterboard or the like should always be placed on the Compact plates. If the plates are glued to the underlying layer and if tiles are going to be installed, all cracks and grooves by the pipes will first need to be filled with Roth Compact® FLEX FIX. Pull out the glue using the smooth side of the putty knife. DO NOT apply the glue as a layer on the aluminium plates unless a clinker is imwithiately put in place. This is done whether or not a membrane or tiles are to be installed directly.

If tiles are to be laid directly, the glue is imwithiately levelled with a toothed putty knife with curved teeth. The size of the teeth is selected based on the amount of glue needed; the larger the tile, the larger the teeth. If the location is a damp room and you are planning to build a floor with a slant, this can be done using the Roth Clima Comfort™ FLOW filler with a thickness of at least 10 mm.
The aluminium plates need to be priwith before adding the filler. The structure is now ready for the lubrication membrane, which is laid in at least two layers. Place a fibre cloth on top of wet layer no. 1,and follow any other instructions from the supplier. The current regulations for waterproofing a damp room must be followed. After 6-8 hours (at 18o C. / 64.4o F.), the tiles can be laid. This is also perforwith with the Roth Compact® FLEX FIX. Pointing can take place after 6-8 hours (at 18o C. / 64.4o F.), and an additive MUST be used in the pointing filler in order to achieve a flexible pointing.

40 x 40 tiles	**min. gap width 5,0 mm**
50 x 50 tiles	**min. gap width 6,0 mm**

Wood beams with a Roth Chipboard



Technical description

The Roth Chipboard floor heating system for Wood beams consists of leading, type approved grooved boards and return boards for 16 x 2 mm LinPex floor heating pipes intended as a replacement for the conventional floor chipboards. In principle, the system is installed the same ways as regular 22 mm floor chipboards. The applicable direction for installation and tiers of beams with marked piping must be accessible during installation. This description applies to installation in larger rooms. However, when equipped with a vinyl covering, the boards can also be used in bathrooms with the weight category L (low). Please also refer to Danish Building and Urban Research Guidelines 200 under "damp rooms".

Teknical data

Roth Chipboard 22mm
HVAC no.: 339295.022
Measurements: .....width 600mm, length 1800mm
Area: 1,08m²
Grooves: ..... 3 each with a c/c distance of 200 mm

Roth Turn-over Chipboard 22mm
HVAC no.: 339295.522
Measurements: .....width 800mm, length 600mm
Area: 0,48m²
Grooves: ..... 4 each with a c/c distance of 200 mm

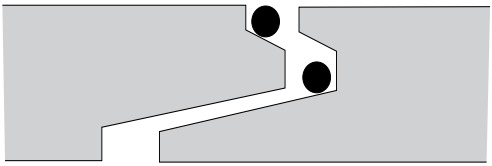
Assembly Instructions

1. Install the chipboards perpendicular to the tiers of beams/joists. The max. distance between beams/joists should be 600 mm c/c. The grooved boards and return boards are equipped with tongue and groove along the sides.

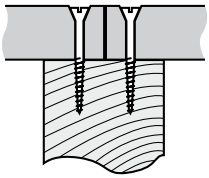
2. The end of the boards are installed with a min. displacement of 600 mm compared to the adjoining board. See installation pattern. The board units must always end on a beam/joist and be attached with screws in both boards.

3. The boards must rest on a beam/joist or be exchanged along all walls. Out of consideration for the strength of the floor, it is important to attach a splice measuring a min of 50 mm on the side of the outermost beam/joist in order to counter the weakening that will arise in connection with the grooves across the return board. Along walls, a min.
10 mm air column must be built for expansion Larger floor surfaces must also be built with an air pocket for every ten meters.

4. The boards need to be carefully glued against all beams/joists and in all assemblies and along all edges. Glue type: use Casco 3304 or a similar glue. Glue consumption: Approx. 1 litter per 10 m2 floor area.



5. The boards are fastened with screws in all beams/joists and exchanges. By the ends, both boards are screwed onto the same beam/joist. By the ends and along the walls, the max. screw distance is 150 mm. The max. screw distance along the sides is 300 mm. 4.0 x 60 mm wood screws are used.



6. After this, the heat distribution plates are attached. The grooves need to be thoroughly cleaned in advance. The plates are carefully pressed into the grooves before laying the pipes. The mutual distance between the heat distribution plates should not exceed 200 mm. The heat distribution plate consumption rate is approx. 4 plates/m².

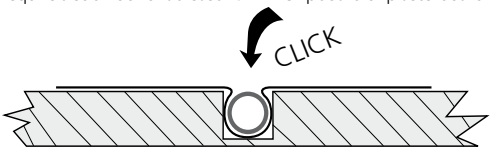
Wood beams with a Roth Chipboard

7. Pipe installation starts by connecting the flow line to the floor heating manifold. Remember to attach a pipe bend.

8. The floor heating pipes are then placed in the heat distribution plates. This takes place according to Roth's installation guide and any drawings. The grooves need to be thoroughly cleaned. The pipes must be laid all the way into the grooves; do not place them above the level of the heating plate. Out of consideration for the expansion of the floor heating pipes, the pipes must be placed all the way against the inside of the half circle of the return board. Be aware of floor heating pipe expansion.
Make sure that the pipes are laid with as little stress as possible, both at bends as well as along straight sections. Max. pipe length: 90 meters

9. Connect the line to the corresponding valve on the floor heating manifold. Mark the system in such a way that it is clear which circuit(s) supply/ies which room(s). Follow the floor heating manifold instructions regarding pressure testing, adjustment, as well as operation and maintenance.

10. The floor heating installation is now ready for the floor covering. You can now install high quality parquet, laminated, or solid flooring according to the corresponding manufacturer's instructions. Remember to place a thin board felt or other felt below the floor covering. Solid floors should not be more than 28 mm thick. Floor covering consisting of clinks, vinyl, or rugs require a sub floor of at least 13 mm chipboard or plasterboard.



Handling and storage

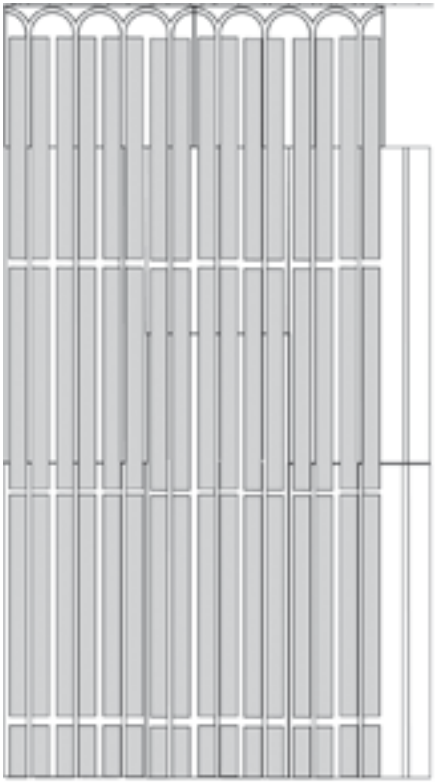
Roth grooved boards and return boards are intended for installation in large, indoor environments. Prior to installation, the boards need to remain at least 24 hours in the environment in which they are later to be installed.
During transportation and outdoor storage, the chipboards should be protected against dirt and precipitation.
If boards with profiled edges are exposed to high air humidity for an extended period, they may sustain damage that may lead to installation problems. For this same reason, the boards need to be handled with care.
The boards should be stored on a dry and level surface. The best environment is 15° - 25° C. (59 - 77o F.) and a relative humidity of 50 - 60%.. The relative air humidity must not exceed 80% for any extended period of time.

Accessories

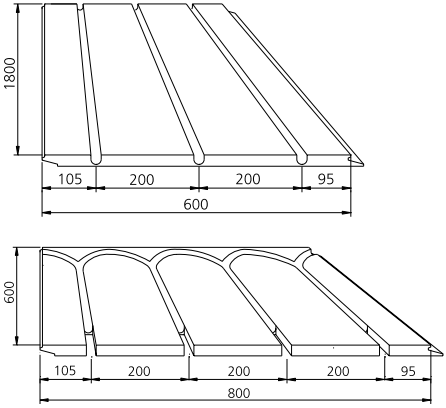
Heat distribution plate 160 x 1200 x 0.3 mm 339217.016
Heat distribution plate 180 x 1200 x 0.5 mm 339217.116
Consumption per m² .....approx. 4 plates

Roth X-PERT S5® 16 x 2,0 mm, á 90 m 087207.216
Roth X-PERT S5® 16 x 2,0 mm, á 200 m 087207.235
Roth X-PERT S5® 16 x 2,0 mm, á 650 m 087207.237
Consumption per m² .....5 meters

Installation design



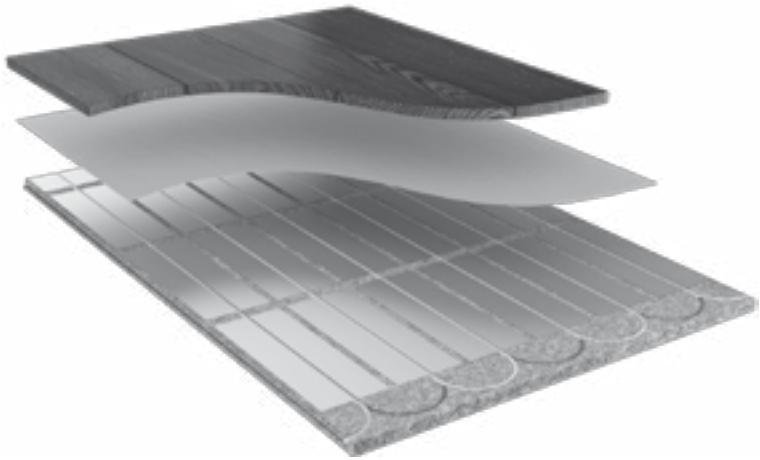
Sketch of dimensions



We reserve the right to engineering changes without prior notice.

Roth Universal Chipboard System

For installation on wood beams and insulation boards, etc.



The Roth Universal Chipboard System is developed for use for both wood beams as well as for insulation plates. It consists of 22 mm plates with grooves for 16 mm floor heating pipes. In principle, the system is installed the same ways as regular 22 mm floor chipboards. The Universal Chipboards can be installed on tiers of beams with assemblies on the tier of beams or with floating assemblies. In addition, the system can be used as a free floating floor on insulation plates, concrete floors, etc.

Return boards are not included with the Roth Universal Chipboard System; they are cut on site. For the chipboard system, Roth recommends using 16 mm X-PERT S5® with the corresponding heat distribution plates.

Areas of use

- On tiers of beams
- On insulation plates, concrete floors, etc.

Technical data

Floor chipboard 22 mm	339295.122
Gross measurements	width 620 mm, length 1820 mm
Net measurements	width 600 mm, length 1800 mm
Area	1.08 m²
Groove	3 units with c/c distance 200 mm
Max. point load by beams	1.5 kN (includes max. deflection of 2 mm)
Max. overall load by beams	3.0 kN/m²

The Roth Universal Chipboard System is made with a low formaldehyde content and meets the requirements of the Electricity Standard (max. 0.008%). The heat distribution plates for the Roth Universal Chipboard System are made of aluminium and are available in two different thicknesses. The plate thickness is selected according to current heating need. This means that the 0.3 mm heat distribution plates are used for standard heating requirements, and 0.5 mm plates are used for greater heating requirements. Consult Roth Nordic A/S regarding dimensioning. If the Universal Chipboard System is used as a free-floating floor on insulation boards made of materials such as EPS , the density of the insulation boards must be a min. of 26-30 kg/m³

Accessories

Heat distribution plate 160 x 1200 x 0.3 mm	339217.016
Heat distribution plate 180 x 1200 x 0.3 mm	339217.116
Consumption per m²	4 pieces
Roth X-PERT S5® 16 x 2.0 mm á 90 m	087207.216
Roth X-PERT S5® 16 x 2,0 mm á 200 m	087207.235
Roth X-PERT S5® 16 x 2,0 mm á 650 m	087207.237
Consumption per m²	5 meters

Handling and storage

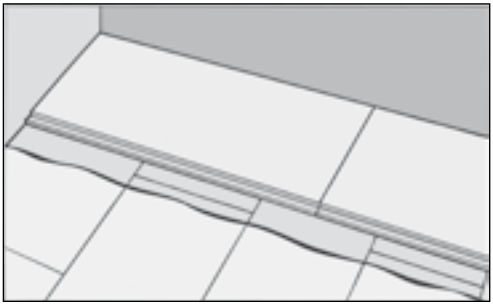
The Roth Universal Chipboard System is intended for installation in dry indoor environments. Before installation , the boards need to be stored for 24 hours in the same environment in which they are to be installed. During transportation and outdoor storage, the chipboards require protection against dirt and precipitation. If exposed to high air humidity for an extended period of time, chipboards with profiled edges may sustain damage that can cause installation-related problems. For this very reason, the boards need to be handled with care. The boards should be stored on a dry and level surface. The best climate is 15o-25o C. (59o-77o F.) and a relative humidity of 50-60%.
The relative humidity must not exceed 80% for an extended period of time, and the humidity content of the boards must not exceed 6% prior to installing the floor covering.

Roth Universal Chipboard System

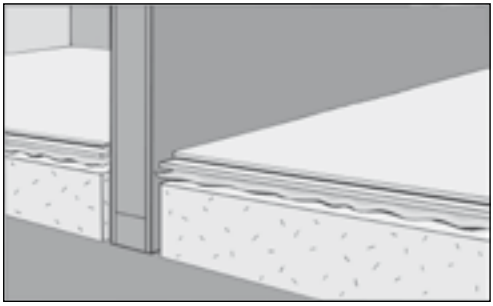
For installation on wood beams and insulation boards, etc.

Installation guide for free floating floors

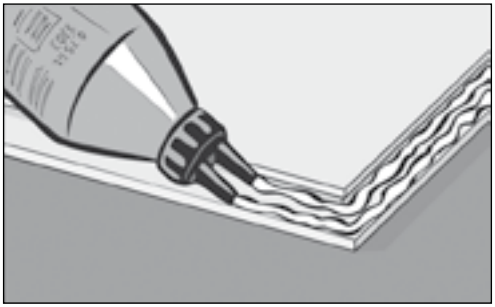
The insulation boards, such as EPS boards, are laid in a running bond pattern and need to have a density of 20 kg/m³. Always use an approved damp insulating layer between the insulation boards or concrete floors and the Roth Universal Chipboard System. It is important that the underlying layer is free from dirt and completely level.



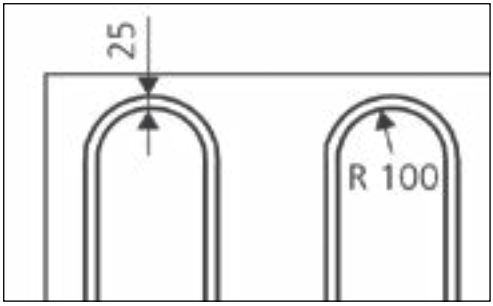
The chipboards are laid from left to right. It is important to maintain a min. of 10 mm airspace between the walls and the chipboards. Larger floor spaces are likewise perforwith with an air pocket every ten meters. The boards are installed with offset joints.



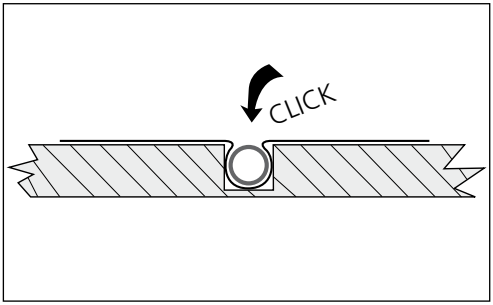
Do not place load-bearing wall elements on top of the Roth Universal Chipboard System, only on load-bearing subfloor.



The Roth Universal Chipboard System must be glued in tongue and groove. Glue consumption: approx. 1.0 meters/17 m². The joints must be filled completely with glue. Use Casco wood glue 3303 or a similar glue.



Where the pipes have to turn in the boards, the grooves must be cut in a way that leaves room for pipe expansion. For this reason, these grooves cannot be below 25 mm in width. with a half-circle radius of 100 mm. Out of consideration for the expansion, when installing the pipes they have to be placed fully against the inside of the half circle.
The heat distribution plates are pressed into the grooves, and the pipes can then be easily pressed in. The grooves must be thoroughly cleansed before installing the heat distribution plates and the pipes.



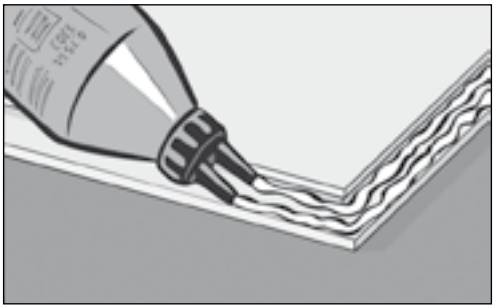
Place the pipes must be placed all the way into the grooves. Do not leave them above the level of the boards. Before laying out the floor covering according to the supplier's guidelines, you will need to lay out a board felt or a floor felt.that is not diffusion tight. Laminated floors should not be thinner than 7 mm. Floor coverings of vinyl, rugs, etc. require a centre layer of at least 13 mm of wood chips or floor plasterboards.

Roth Universal Chipboard System

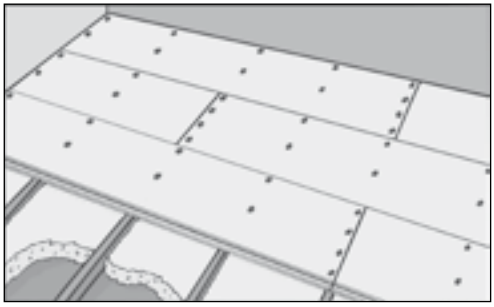
For installation on wood beams and insulation boards, etc.

Installation guide for tiers of beams with assembly on the beams

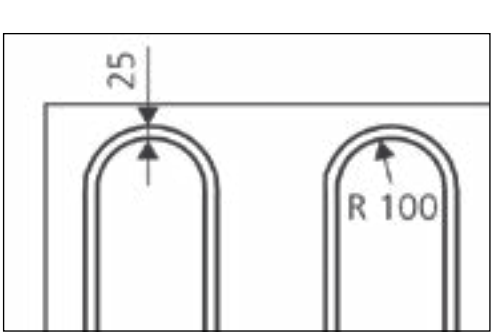
The boards are placed from left to right, perpendicular to the beams. The beam distance cannot exceed a c/c distance of 600 mm. It is important to maintain a min. of 10 mm airspace between the walls and the chipboards. Larger floor spaces are likewise perforwith with an air pocket for every ten meters. The boards are installed with offset joints. Out of consideration for the strength of the floor, it is important to attach a plate measuring at least 50 mm to the side of the outermost beam to counteract the weakening that occurs in the board when cutting takes place straight across the board.



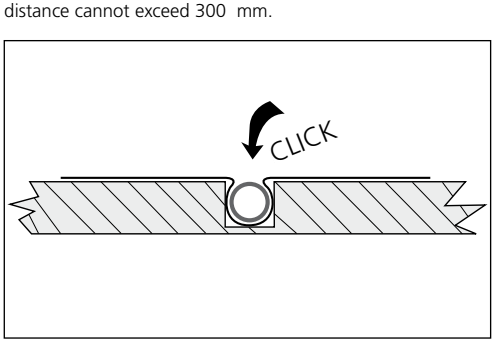
The Roth Universal Chipboard System must be glued in tongue and groove, as well as on the beams. Glue consumption: approx. 1.0 meters/10 m2. The joints must be completely filled with glue. Use Casco wood glue 3303 or similar glue.



The screws are tightened as shown on the picture. The screws are countersunk by 2 mm. Use 4.2 x 51 mm wood screws or similar screws. Screw distance: The distance by the beam assemblies cannot exceed 150 mm, and on the other beams the distance cannot exceed 300 mm.



Where the pipes have to turn in the boards, the grooves must be cut in a way that leaves room for pipe expansion. For this reason, these grooves cannot be below 25 mm in width with a half-circle radius of 100 mm. Considering the expansion, when installing the pipes they have to be placed fully against the inside of the half circle.



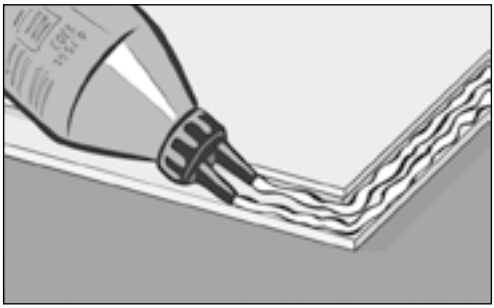
The heat distribution plates are pressed into the grooves, and the pipes can then easily be pressed in. The grooves must be thoroughly cleansed before installing the heat distribution plates and the pipes.
Place the pipes must be placed all the way into the grooves. Do not leave them above the level of the boards. Before laying out the floor covering according to the supplier's guidelines, you will need to lay out a floor felt or a felt. that is not diffusion tight. Laminated floors should not be thinner than 7 mm. Floor coverings of vinyl, rugs, etc. require a centre layer of at least 13 mm wood chips or floor plasterboards.

Roth Universal Chipboard System

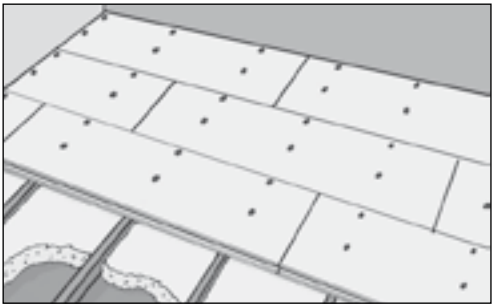
For installation on wood beams and insulation boards, etc.

Installation guide for tiers of beams with floating joints.

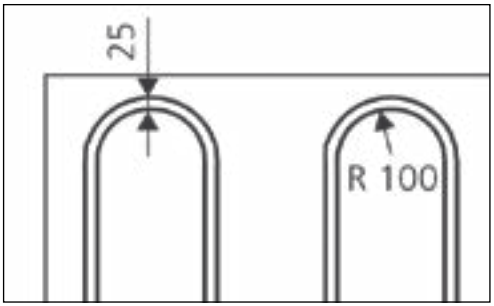
The boards are placed from left to right, perpendicular to the beams. The beam distance cannot exceed a c/c distance of 600 mm. It is important to maintain a min. of 10 mm airspace between the walls and the chipboards. Larger floor spaces are likewise perforwith with an air pocket every ten meters. The boards are installed with offset joints. Out of consideration for the strength of the floor, it is important to attach a plate measuring at least 50 mm to the side of the outermost beam to counteract the weakening that occurs in the board when cutting takes place straight across the board.



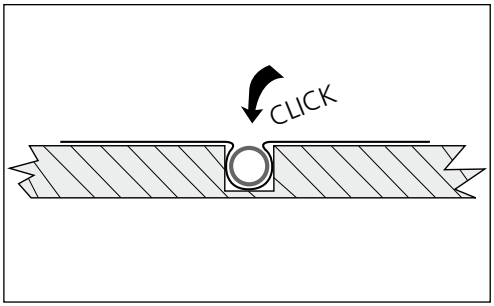
The Roth Universal Chipboard System must be glued in tongue and groove, as well as on the beams.
Glue consumption: approx. 1.2 meters/10 m2. The joints have to filled completely with glue. Use Casco wood glue 3303 or similar glue.



Insert and tighten the screws at a distance of 300 mm as shown on the picture. The screws are countersunk by 2 mm. Use 42 x 51 mm wood screws or similar screws.



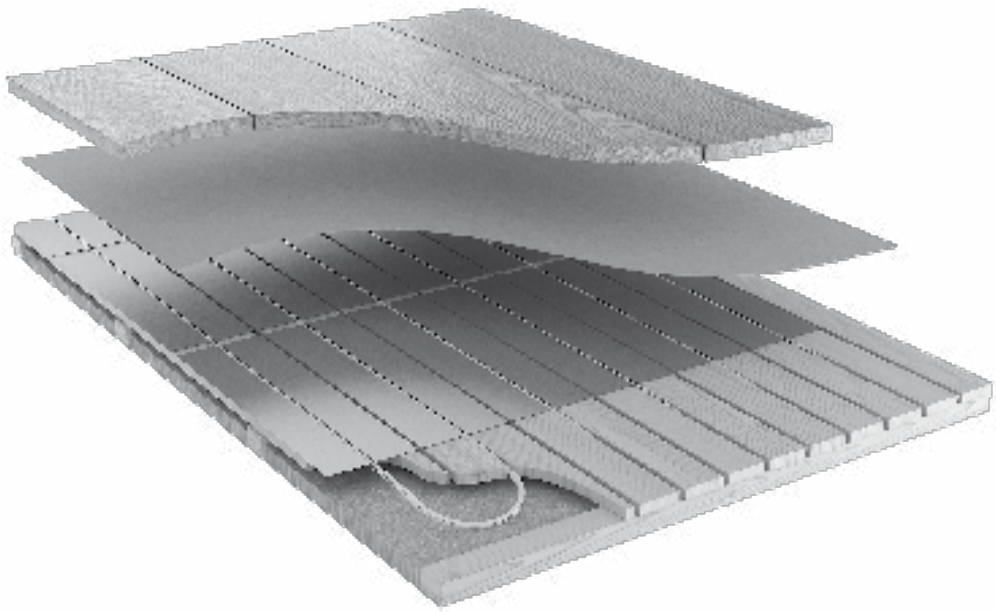
Where the pipes have to turn in the boards, the grooves must be cut in a way that leaves room for pipe expansion. For this reason, these grooves cannot be below 25 mm in width. with a half-circle radius of 100 mm. Out of consideration for the expansion, when installing the pipes they have to be placed fully against the inside of the half circle.



The heat distribution plates are pressed into the grooves, and the pipes can then easily be pressed in. The grooves must be thoroughly cleansed before installing the heat distribution plates and the pipes.
Place the pipes must be placed all the way into the grooves. Do not leave them above the level of the boards. Before laying out the floor covering according to the supplier's guidelines, you will need to lay out a floor felt or a felt. that is not diffusion tight. Laminated floors should not be thinner than 7 mm. Floor coverings of vinyl, rugs, etc. require a centre layer of at least 13 mm wood chips or floor plasterboards.

We reserve the right to modify the construction without prior notice.

Wood beams with Roth Heat Distribution Plates for laths



Technical description

Roth heat distribution plates for laths are specially designed in such a way that the floor heating system does not increase the overall height compared to a normal floor structure.
Heat distribution plates for laths are available for 16 and 30 mm floor heating pipes.
The heat distribution plates are mounted on the lath, which is attached to joists or the tier of beams. The distance between the lath boards should be approx. 19 mm for 16 mm pipes and approx. 23 mm for 20 mm pipes. The centre distance between the slots where the pipes are to be placed needs to be 300 mm. Roth X-PERT S5® or Roth Alu-LaserPlus® pipes are pressed into place in grooves that run lengthwise on the heat distribution plates. The grooves on the plates are designed in such a way as to lock the pipe into place, thus serving as
"pipe holders".

Wood beams with Roth Heat Distribution Plates for laths

Installation

1.
Laths of an appropriate thickness are attached with 2 nails in each beam or joist. The thickness of the laths should be appropriate for the desired floor covering.
The first lath board is placed 50 mm from the outer wall and is then placed with a slot distance of 19 mm (for 16 mm pipes) or 23 mm (for 20 mm pipes), respectively.
To facilitate pipe installation at the bends, do not fasten the boards in the last beam/joist until the pipes have been laid.

2.
Next, installation of the heat distribution plates can begin. The plates are pressed into the slots between the lath boards and need to be placed with a distance of approx. 20 mm from one another. If needed, they can be shifted to the adjoining plates.

3.
Prior to installing the pipes, make sure that the grooves are completely clean and free from dirt. The pipes are installed according to Roth's recommended installation pattern.
At the ends, the pipe is bent 180 degrees and is run under the lath, then back in the next groove.
Place the pipes all the way into the grooves; do not place them above the level of the upper edge of the plates. At the pipe bends, make sure that the pipes are able to expand.

4.
The last pipe end is attached to the manifold pipe. The pipe is now ready for pressure testing and adjustment. The floor heating system is now ready for the floor covering. Before installing the floor covering according to the floor manufacturer's instructions, a board felt, foam, or similar material needs to be put in place.
The thickness of the floor covering should not exceed 28 mm. Rugs, vinyl, etc. require a sub floor of at least an 18 mm chipboard or similar board.

Technical data

Heat distribution plate for 16 mm pipes

HVAC no. 339217.216
Material: .....0,7 mm aluminium sheet
Length: ..... 1200 mm
Width: ..... 260 mm
Material consumption: .....2,7 units/ m²
Pipe consumption: ..... approx. 3,3 m/ m²
Recommended bend: .....for every 200, 400, og 600 mm

Heat distribution plate for 20 mm pipes

HVAC no. 339217.020
Material: .....0,5 mm aluminium sheet
Length: ..... 1200 mm
Width: ..... 260 mm
Material consumption: .....2,7 units/ m²
Pipe consumption: ..... approx. 3,3 m/ m²
Recommended bend: .....for every 200, 400, og 600 mm

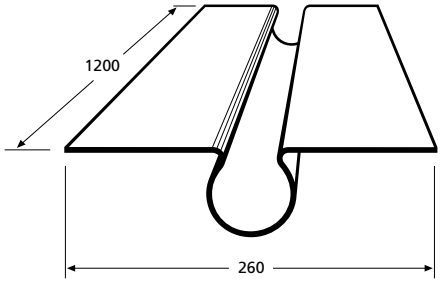
Accessories

Roth X-PERT S5® 16 mm á 90 m	087207.216
Roth X-PERT S5® 16 mm á 200 m	087207.235
Roth X-PERT S5® 16 mm á 650 m	087207.237
Roth Alu-LaserPlus® 16 mm á 50 m	087100.215
Roth Alu-LaserPlus® 16 mm á 100 m	087100.216
Roth Alu-LaserPlus® 16 mm á 240 m	087100.246
Roth Alu-LaserPlus® 16 mm á 500 m	087100.276
Roth X-PERT S5® 20 mm á 120 m	087207.220
Roth X-PERT S5® 20 mm á 240 m	087207.240
Roth X-PERT S5® 20 mm á 600 m	087207.249
Roth Alu-LaserPlus® 20 mm á 100 m	087100.220
Roth Alu-LaserPlus® 20 mm á 240 m	087100.250

Installation tips

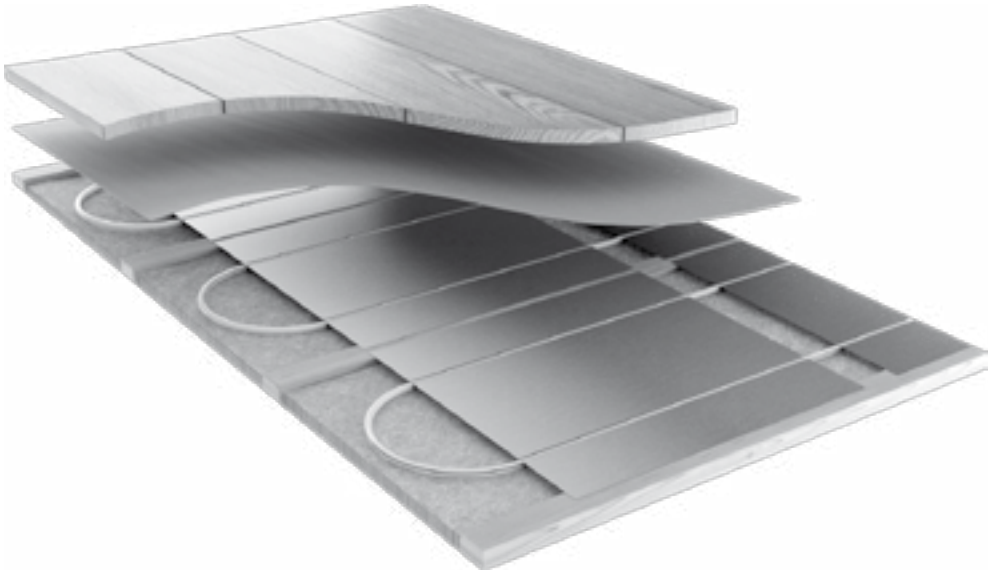
The floor heating pipes expand when exposed to heat. This may result in noise nuisance if the pipe has contact with the wood structure.
For this reason, it may be a good idea to perform a test run of the system with hot water before installing the floor covering. This way you can observe whether the pipes enter into contact with the wood structure during expansion.

Sketch of dimensions



We reserve the right to engineering changes without prior notice.

Wood beams with Roth Heat distribution plate, self-sustaining



Technical description

Roth self-sustaining heat distribution plates for floors with joists are specially designed in such a way that the floor heating system does not increase the overall height compared to a normal floor structure.

Joists or beams need to have a normal mutual centre distance of 600 mm, and the insulation needs to be placed all the way up below the heat distribution plate (it should end 15 mm below the upper edge of the joist) in such a way that the insulation touches the bottom part of the heat distribution plate. The insulation needs to be a rigid/semi-hard type, e.g. Rockwool Flexi A-batts.

The plates have two longitudinal grooves that the 20 mm Linpex® Oxygen Stop pipes can be pressed into. They are designed in such a way that when the pipe is pressed into the groove, it gets locked in place, the plate working as a "pipe holder."

The self-sustaining heating plate is built to continuously press against the floor, thereby ensuring ideal heat transfer, which is a precondition for a low-temperature system.

Areas of use

The heat distribution plate to incorporate floor heat in normal wood floor structures with joists and insulation, or for story partitions with joists of beams.

Technical data

Roth Heat Distribution Plate, self-sustaining	
HVAC no.:	339231.065
Measurements;	width 590 mm, length 500 mm
Area:	0.3 m²
Grooves:	2 each with a c/c distance of 300 mm
Material:	0.55 steel sheet
Consumption:	2.7 sheets per m²

Accessories

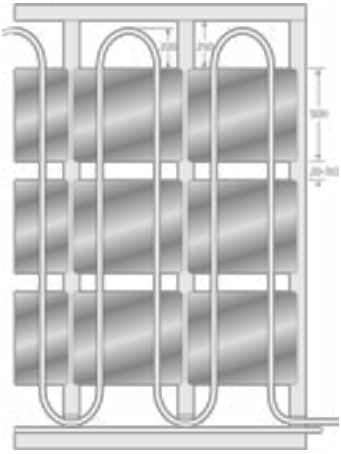
Roth X-PERT S5® 20 x 2,0 mm á 120 m	087207.220
Roth X-PERT S5® 20 x 2,0 mm á 240 m	087207.240
Roth X-PERT S5® 20 x 2,0 mm á 600 m	087207.249

Wood beams with Roth Heat distribution plate, self-sustaining

Installation guide

1. Once the joists or wood beams are placed with a distance of 600 mm between each other, the heat distribution plate is laid on top of the joist. The distance between the plates alongside the joists needs to be 20-50 mm. Using flat head screws, fasten the plates on the one end only. The width of the plate is 590 mm. This allows for enough space for a small amount of air between the plates on the joist. The plates must never overlap. The plate must maintain a distance to the wall in a transversal direction of approx. 250 mm because of the bend. See drawing.

2. Make a recess in the joists where the pipe will cross. The recesses need to be min. 25 x 50 mm. To avoid noise, it is a good idea to pad the recess with a piece of board felt or similar material.



3. Begin the installation of the floor heating pipe is by connecting the flow line to the floor heating manifold. Remember to attach the pipe bend. First lay the pipe in the plates located by the outer wall and then work your way back toward the manifold.
The installation should take place according to Roth's installation guide and any drawings. The grooves need to be thoroughly cleaned. Place the pipes must be laid all the way into the grooves; do not be place them above the level of the plate. Out of consideration for the expansion of the floor heating pipe, place the pipe all the way against the inside of the recess in the joist.
Make sure that the pipe is laid with as few stress points as possible. Max. pipe length: 120 meters

Two people are recommended for installation. One person will control the pipe while the other presses the pipe into the groove in the plate. While installing the pipe, the back side of the plate will need support. See drawing.
After installing the pipe in the plate, make sure that the plates have a rising height (10-15 mm) that will allow the plate to press against the floor covering when the floor covering is put in place.

4. Connect the return line to the corresponding valve on the floor heating manifold. Mark up the system in such a way that it is clear which circuit(s) supply/ies which room(s). Follow the floor heating manifold instructions regarding pressure testing, adjustment, as well as operation and maintenance.

5. The floor heating system is now ready for the floor covering.

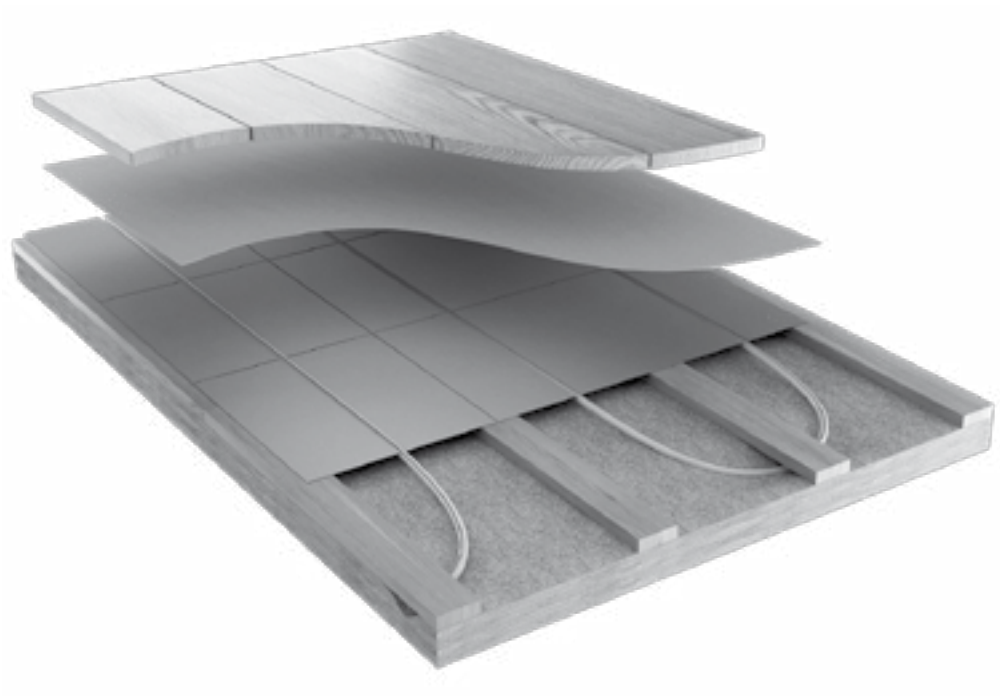
Important!

Do not step on the plates! Cover the joists with chipboards where it is necessary to walk. Walking on the joists is not recommended since the plates can be bent over the edge of the joists. Be aware that all PEX pipes have an expansion, which means that variations in the flow temperature may cause certain noise problems (the pipe rubbing against the joists). This effect can be reduced by putting the floor heating system into operation prior to installing the floor covering to make sure that the heating system works noiselessly. In the event that any sound occurs, a thin piece of plastic or felt can be inserted between the pipe and the joist.

Choice of wood floor

Different types of wood floors can be used, such as parquet, laminated, or solid floor; chipboard; or similar types. The floor needs to be fastened in the joists and have direct contact with the heat distribution plates.
The thickness 9*of the floor covering should be no less and 19 mm and no more than 28 mm*. Floor covering consisting of laminate, links, vinyl, or rugs requires a sub floor of at least 19 mm chipboard or plasterboard.
Wood is a living material, and this is often the reason for using it. Normally, a properly selected wood floor with floor heating will not look any different from a wood floor without floor heating. However, cracks between the boards cannot be completely avoided.
Wood works when there is a change in the moisture content, but not all wood work at the same rate. Generally speaking, single-piece boards work more than lamella-glued parquet, and chipboard works the least.
The wood floor is installed according to the respective manufacturer's instructions.
Remember to place a thin board felt or other felt below the floor covering. In addition, the floor supplier may also wish to install a varpor barrier. Remember to consider any existing varpor barrier when evaluating this.

Heat Distribution Plate on Laths



Technical description

The Roth heat distribution plate for floors with laths is especially shaped to prevent the floor heating system from increasing the building height compared to a normal floor structure.

The laths need to have a centre distance of 300 mm between each other, and the insulation needs to be placed all the way up below the heat distribution plate (end below the laths).

The plates feature two longitudinal grooves where the 20 mm X-PERT S5® pipes can be pressed in place. The grooves are shaped in such a way that when the pipes are pressed into the groove, they are locked in place, and the plate works as a "pipe holder".

The laths keep the heat plate against the floor, thereby ensuring the idea heat transfer that is a prerequisite for a low-temperature floor heating system.

Areas of use

The heat distribution plate is constructed to integrate floor heating in wood floor structures and storey partitions with laths and insulation.

Technical specifications

Roth Heat Distribution Plate

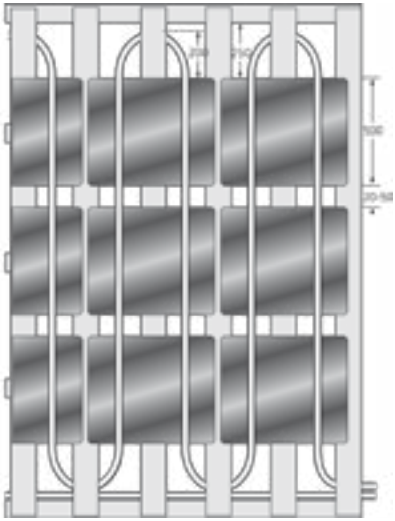
HVAC no.:	339231.055
Measurements:	width 590 mm, length 500 mm
Area:	0.3 m²
Grooves:	2 units with c / c 300 mm
Material:	0.5 mm steel plate
Consumption:	2.7 plates per m²

Heat Distribution Plate on Laths

Installation guide

1. When the laths (e.g., 28 x 95 mm) are placed with a mutual distance of 300 mm, the heat distribution plate is placed on top of the laths. The distance between the plates along the laths needs to be 20-50 mm. The plates are only attached in the one end with flat head nails. The width of the plate is 590 mm, which means that there is room for a bit of air between the plates on the laths. Never place the plates with an overlap. The plates need to maintain a distance of approx. 250 mm to the wall to leave room for turning. Se illustration.

2. When turning the pipe by the wall, lead the pipe below the laths.



3. Installation of the floor heating pipe begins by attaching a flow line to the floor heating manifold. Remember to install a pipe bend. First install the pipe in the plates located by the outer wall, and then work your way back toward the manifold.

Installation must take place according to Roth's installation guide and any drawing. The grooves must be thoroughly cleansed. The pipe needs to be placed all the way into the grooves; do not place it above the level of the plate.

Make sure the pipe is laid with as little strain as possible. Max. pipe length: 120 m.

It is recommended that two people perform the installation. One person will guide the pipe, and the other person will press the pipe into the grooves of the plate. The plate needs to be supported on the back side during pipe installation. Se illustration.

4. Connect the return line to the corresponding valve on the floor heating manifold. Mark the system in such a way that it is obvious what circuit(s) supplies/y what room(s). Follow the instructions for the floor heating manifold with respect to pressure testing, adjustments, as well as operation and maintenance.

5. The floor heating system is now ready for the floor covering.

Important!

Do not walk on the plates!

Place chipboards on top of the laths in the areas where it is necessary to walk. Walking on the laths is also not recommended since this may cause the edge of the plates to become bent.

Be aware that all floor heating pipes have an expansion that involves certain noise problems (the pipe rubbing against the joists) caused by variations in the flow temperature. This can be reduced by putting the floor heating system into operation before installing the floor covering to make sure that the floor heating system operates in a soundless manner. In the event of any noises, a thin layer of plastic or felt can be placed between the pipe and the laths.

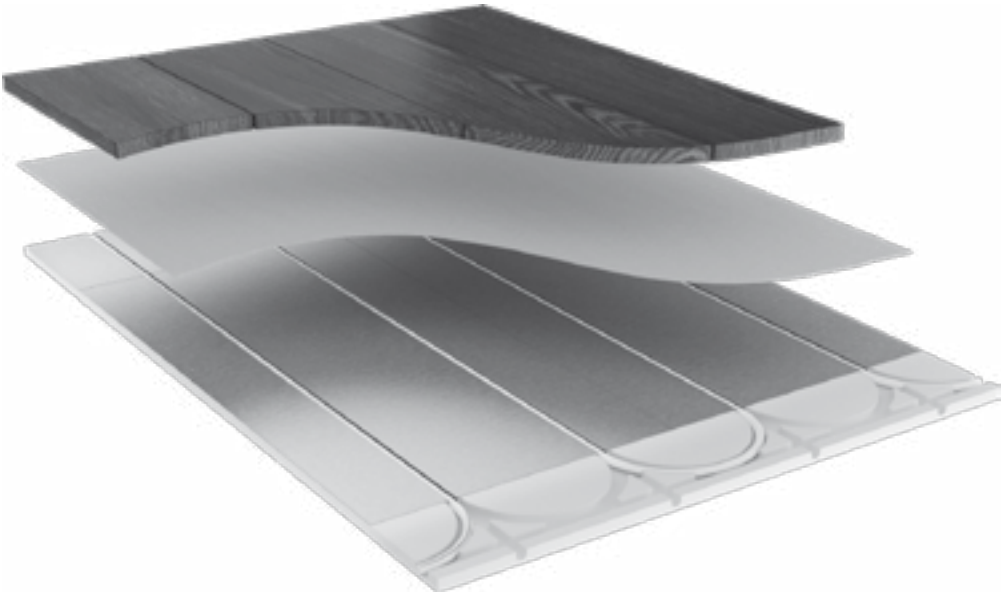
Choice of wooden floor

Different types of wooden floors can be used, such as parquet, laminated flooring, solid flooring, chipboard, or the like. Fasten the floor in the laths in such a way that it has direct contact with the heat distribution plates.
The thickness of the floor covering should be no less than 19 mm and no more than 28 mm. Floor covering made of laminate, latches, vinyl, or carpets require a sub-flooring consisting of at least 19 mm floor chipboards or 2 x 13 mm floor plaster. Wood is a live material, and this is often the reason it is used. Normally, a properly selected wooden floor with floor heating will not look any different from a floor without heat. However, cracks between the plates cannot be completely eliminated. Wood movements occur when the humidity content is changed, but not all wood moves at the same rate. Generally speaking, whole plates move more than laminated parquet, and chipboard moves the least. Likewise, different wood types have different types of wood movements.
Install the wooden floor according to the instructions from the respective supplier.
Remember to place a thin board felt or regular felt below the floor covering. Furthermore, the floor supplier may have wishes regarding the installation of a vapour seal. Remember to take this into account when considering any existing vapour seals.

Accessories

Roth X-PERT S5® 20 mm, á 120 m	HVAC no. 087207.220
Roth X-PERT S5® 20 mm, á 240 m	HVAC no. 087207.240
Roth X-PERT S5® 20 mm, á 600 m	HVAC no. 087207.249
Consumption per m²	3,3 meter

Roth Combi Plate System



Areas of use

- Roth Combi Plates are shaped to fit on top of an exis ting level floor, which can be either new or old.
- The plates are placed really tight over the entire floor, and the floor heating pipes are then put in place.
- The system can be installed either floor plan or in story partitions. If the right floor covering is selected, the Combi Plate System can also be used in a damp room.

Technical description

The Combi Plate System consists of a Combi Plate and a Combi Return board.

The Combi Plate is cast in 25 mm polystyrene with an integrated heat distribution plate in 0.45 mm steel with 2 grooves, c/c distance 300 mm for 20 mm floor heating pipes.

The Combi Return Board is cast in 25 mm polystyrene with curved grooves for 20 mm floor heating pipes. The return board does not include a heat distribution plate.

The return board features grooves for bending the floor heating pipes, as well as grooves for running the pipe.

Technical pecifications

Roth Combi Plate 25/20

HVAC no.: 339311.025
Measurements: ...height 25 mm, width 600mm, length 500mm
Area: ..... 0.3 m²
Grooves: ..... 2 each with a c/c distance of 300 mm
Material: .....25 mm polystyrene, density 30 g/l, weight 205 g, and 0.45 mm steel plate.
Consumption per m²: ..... 3,3 plates
Thermal conductivity .....0.031 W/m K

Roth Combi Return Board 25/16-20

HVAC no.: 339311.825
Measurements: ....height 25mm, width 600mm, length 252mm
Area: ..... 0.21 m²
Grooves: ..... curved, c/c 300 mm
Material: ..... 25mm polystyrene, density 30g/l, weight 235g
Consumption: ..... 1 per curve

Roth Combi Plate System

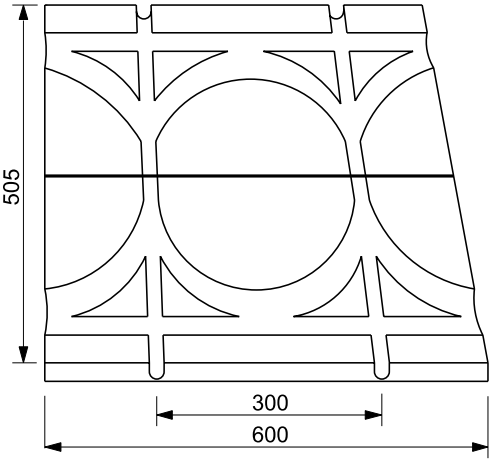
Installation guide

1. It is very important for the underlying layer below the Combi Plates to be completely straight and stable. Any irregularities such as holes and cavities can be offset by dry sand. Very uneven floors are filled with a suitable floor filler.
2. Next, the Combi Plates and the Combi Return Boards are installed to cover the entire floor lengthwise in such a way that the fewest possible curves are achieved. The edges are filled with regular 25 mm polystyrene. If needed, the Combi Plates can be shortened using a jigsaw from the back side. Remember to especially remove the dovetails from the grooves where the pipes go.
3. Begin the installation of the floor heating pipe by connecting the flow line to the floor heating manifold. Remember to attach the pipe bend. First lay the pipe in the plates located by the outer wall and then work your way back toward the manifold. The installation should take place according to Roth's installation guide and any applicable drawings. The grooves need to be thoroughly cleansed. Place the pipes all the way into the grooves; do not place them above the level of the plate. Out of consideration for the expansion of the floor heating pipes, the pipes must be placed all the way against the inside of the half circle of the return board. Make sure that the pipes are laid with as few stress points as possible. Max. pipe length: 120 meters
4. Connect the return line to the corresponding valve on the floor heating manifold. Mark the system in such a way that it is clear which circuit(s) supply/ies which room(s). Follow the floor heating manifold instructions regarding pressure testing, adjustments, as well as operation and maintenance.

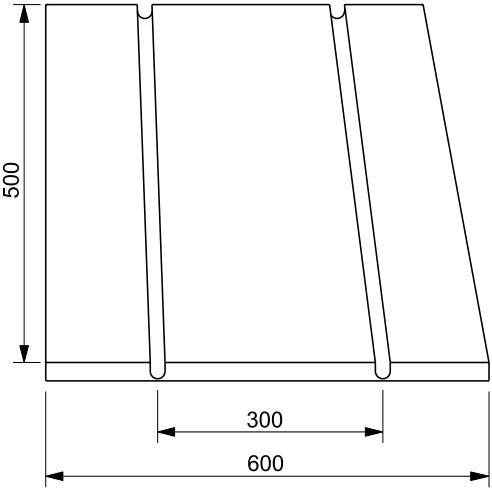
Choice of wood floor

Different kinds of wood floors can be used, such as parquet, laminated flooring, solid flooring, chipboard, plasterboard, etc.
Install the floor as a free-floating floor; i.e., all parts are glued together with no downward attachment.
The thickness of the floor covering should be no less than 19 mm
and no more than 28 mm. Floor covering consisting of laminate, links, vinyl, or rugs requires a subfloor of at least 19 mm chipboard or plasterboard.
Wood is a live material. This is often the reason why it is used. Normally, a properly selected wood floor with floor heating will not look any different from a wood floor without floor heating. However, cracks between the boards cannot be completely avoided.
Wood works when there is a change in the moisture content, but not all wood works at the same rate. Generally speaking, single-piece boards work more than lamella-glued parquet, and chipboard works the least.
The wood floor is installed according to the respective manufacturer's instructions.
Remember to place a thin board felt or floor felt below the floor covering. In addition, the floor supplier may also wish to install a vapor barrier. Remember to consider this when evaluating any pre-existing vapor barrier.

Sketch of dimensions



The return board is created by splitting the above-illustrated board along the rift in the middle.
There are two return boards for each board.
The return board in the above sketch of dimensions is the correct one.



Accessories

Roth X-Pert S5® 20 mm á 120 m 087207.220
Roth X-Pert S5® 20 mm á 240 m 087207.240
Roth X-Pert S5® 20 mm á 600 m 087207.249

Roth Alu-LaserPlus® 20 mm á 100 m 087100.220
Roth Alu-LaserPlus® 20 mm á 240 m 087100.250

Roth X-PERT S5® floor heating pipes

– One floor heating pipe for all types of floor heating

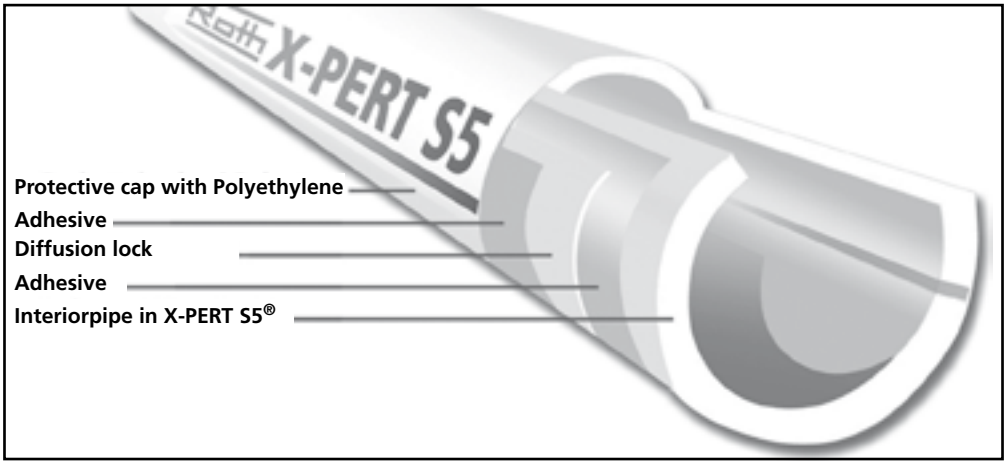
Roth X-PERT S5® pipes meet all requirements for floor heating pipes. The pipes are flexible and easy to work with, also during cold weather. The pipes are available in the dimensions 10.5 – 16 and 20 mm and fit all Roth plate systems and fittings. X-PERT is a 5-layer pipe, i.e. the oxygen barrier is inside the pipe which prevents it from squeaking when the it is used in metal heat distribution plates.
The pipes are manufactured at our own German factories and are certified according to ISO 9001.

The Roth X-PERT S5 pipe has several advantages:

- Long durability
- Great heat stability. Allowed operating temperature up to 70 °C (95 °C short-term) at an operating pressure of 6 bar.
- Ability to withstand "construction site treatment"
- The oxygen barrier is placed inside the pipe wall
- Great flexibility that makes it easy to work with, also during cold conditions
- DIN 4726-compliant diffusion tightness

Physical characteristics of X-PERT S5® pipes

	10,5 mm	16 mm	20 mm
Thermal conductivity W/m K	0.35	0.35	0.35
Coefficient of linear expansion 1/K	$1{,}95x10^{-4}$	$1{,}95x10^{-4}$	$1{,}95x10^{-4}$
Minimum bending radius	5x dia.	5x dia.	5 x dia.
Pipe roughness, mm	0.007	0.007	0.007
Number of layers in pipe wall	5	5	5
Max. operating temperature, °C	70	70	70
Max. short-term temperature, °C	95	95	95
Max. operating pressure, bar	6	6	6
Weight, Kg/m	0.04	0.10	0.12
Water volume, l/m	0.05	0.11	0.21
Diffusion tight according to standard		DIN 4726	
Method of manufacture		CoEx technology	
Possible delivery lengths:			
70 meters	X		
90 meters		X	
120 meters			X
200 meters	X	X	
240 meters			X
600 meters			X
650 meters		X	



Roth Floor Heating Manifold 2010

With or without flow meters

Technical description

The Roth floor heating manifold, with or without flow meters, is a quality product manufactured by Roth, both in terms of construction as well as technique.

The floor heating manifold comes with 2 to 12 ramifications and is manually controlled and ready for the installation of thermo motors. The floor heating manifold includes all necessary valves for controlling a modern floor heating system, as well as suspension attachments for wall or in-cabinet mounting.

The flow meters feature a scale of 0 to 4.0 l/min. The water in the system does not have direct contact with the glass in the meters, thereby eliminating the risk of deposits on the inside of the glass.

The Roth floor heating manifold consists of a heavy corrosion resistant brass profile. The factory installed suspension attachment displaces the lower manifold (return flow) by 32 mm compared to the upper manifold (flow). This ensures that the floor heating pipes can be installed problem free. The floor heating manifold comes with a 1" outside thread in both ends, enabling feeder lines to be connected at either end.

The return flow features a handle/protective cap, making it ready for attaching thermo motors.. The connections to the individual hoses have a mutual C/C distance of 54 mm.

Multiple floor heating manifolds can be combined into more than 12 circuits as needed.

The Roth Floor Heating Manifold can only be used with water as a withium; however, it is permissible to use a maximum glycol mixture of 50%. The use of any other type of fluid or additive requires prior clearing with Roth Nordic.

Technical specifications

Material	Brass CuZn37
Differential pressure	max. 20 Kpa
Operating temperature	max. 70°C
Operating pressure	max. 6 bar
Number of connections	2-12 circuits
Manifold pipe thread	1" ext.
Thread on connections	EURO ¾" ext.
Thread for thermo motor	M30 x 1.5 mm
Suspension attachments	Galvanized steel

Roth Floor Heating Manifold 2010

Scope of delivery

The floor heating manifold is delivered complete and mounted in suspension attachments with a rubber dam, marking slips with room descriptions, as well as an installation guide. Manifold connectors are not included but are available for floor heating pipes in all commonly used dimensions.

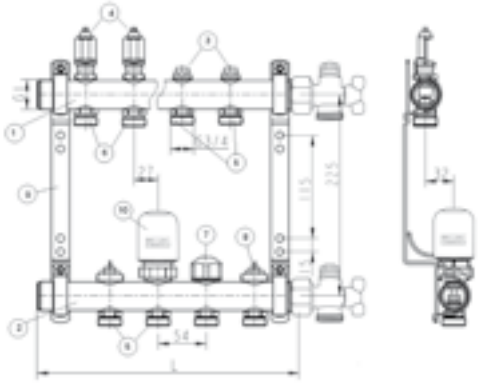
Accessories

A wide selection of accessories is available for the Roth floor heating manifold.

401973.828	Roth end piece w/ drain and ventilation (kit)
401973.838	Roth connector kit 1", straight
401973.839	Roth connector 1" nipple x 1" circ., elbow
401973.858	Roth ball valve kit 1", straight
401973.859	Roth ball valve kit 1", elbow
401973.868	Roth ball valve kit 1", w/ thermometer
401973.808	Roth bypass valve kit 1"
401973.818	Roth adjustment valve kit 1"x ¾", (4-36 l/min.)
401973.846	Roth ball valve ¾" EURO
401973.876	Roth thermometer tee ¾" EURO
401973.886	Roth insulation for FH manifold (6 ramif.)
401974.810	Roth manifold connector 10.5 mm x ¾"
401974.812	Roth manifold connector 12 mm x ¾"
401974.815	Roth manifold connector 15 mm x ¾"
401974.816*	Roth manifold connector 16 mm x ¾"
401974.820*	Roth manifold connector 20 mm x ¾"
466210.xxx	Floor heating shunts
046219.xxx	Manifold cabinets

* Can also be used for Alu-LaserPex®

Sketch of dimensions



1. Flow manifold with adjustment valves and flow meter if applicable
2. Return flow manifold with control valves
3. Adjustment valve
4. Flow meter
5. Pipe connection EURO ¾", standard lower part
6. Pipe connection EURO ¾", flow meter lower part
7. Handle/protective cap
8. Control valve for thermo motor
9. Suspension attachment
10. Roth Thermo motor

Adjustments

On the manifold without flow meters, the water volume is set using an M4 Allen key, and the setting is locked with an M5 Allen key. On the manifold with flow meters, the water volume is set using the control valves on the bottom manifold. This is done by using a key that can also be used to shut off the circuit by turning the actual flow meter
All hydraulic adjustment values provided by Roth Nordic are from a closed position. This means that you should always check that the valves are completely shut before starting the adjustments.

HVAC no. without flow meter	HVAC no. with flow meter	Number of hoses	Length in mm	Length in mm incl. end pieces
401973.002	401973.502	2	190	250
401973.003	401973.503	3	240	300
401973.004	401973.504	4	298	358
401973.005	401973.505	5	352	412
401973.006	401973.506	6	406	466
401973.007	401973.507	7	460	520
401973.008	401973.508	8	514	574
401973.009	401973.509	9	568	628
401973.010	401973.510	10	622	682
401973.011	401973.511	11	676	736
401973.012	401973.512	12	730	790

Roth UNIVERSAL Floor Heating Shunt

With thermostatic valve and Alpha2 L pump

The shunt is used in conjunction with the manifold unit. This way, it can be adapted to the desired number of hoses.

The shunt has a capacity of up to 240 m². The shunt can be installed on the right or left side of the manifold unit.

The shunt is developed for mixing water when the heat source has a higher flow temperature than needed for floor heat.

The shunt has a thermostatic valve.

Areas of use

- Floor heating with normal boiler
- Floor heating with solid fuel boiler
- Floor heating with condensing boiler
- Floor heating with district heating
- Floor heating with solar heating
- Floor heating with heat pump

Roth UNIVERSAL Floor Heating Shunt

Technical description

The ready-assembled Roth shunt is intended to be built together with manifold unit 1", from 2 to 12 hoses. It can work in conjunction with Roth Touchline or Roth CABLE room controls.

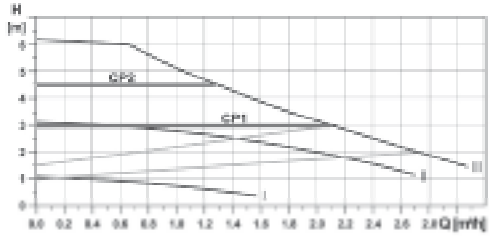
The shunts can be used for systems with both manual and automatic controls. The shunt comes with integrated valve with presetting for primary flow adjustment, circulation pump, thermometer and cable mounted on the pump. The shunt includes 4 rubber discs to be used behind the suspension kit on the manifold unit if mounted directly on the wall. This is not necessary if the shunt is to be mounted in a cabinet.

The included pump Alpha2 L 15/60 is dimensioned for normal floor heating systems of up to 240m².

Special instructions for Roth UNIVERSAL shunt with thermostatic valve:

The thermostatic valve provides the floor heating system with simple flow temperature control. The temperature is easily adjusted on the thermostat head in the range from 20°C to 70°C.

Pumping curve



Technical specifications

Roth UNIVERSAL Shunt with thermostatic valve	466210.040

Common specifications:

Max. operating temperature (primary)	90°C
Max. differential pressure (primary)	20-50 kPa
Min. operating pressure from primary pump	200 Pa
Max. operating pressure	10 bar
Pump	Grundfos Alpha2 L 15/60
Connection (primary)	3/4"EURO (connectors not included)
Material	Brass Ms58 and Ms63
Gaskets	EPDM elastomer or AFM 34
Flow temperature adjustment range	20-70°C
Electrical outlet	230 V grounded without socket

Installation guide

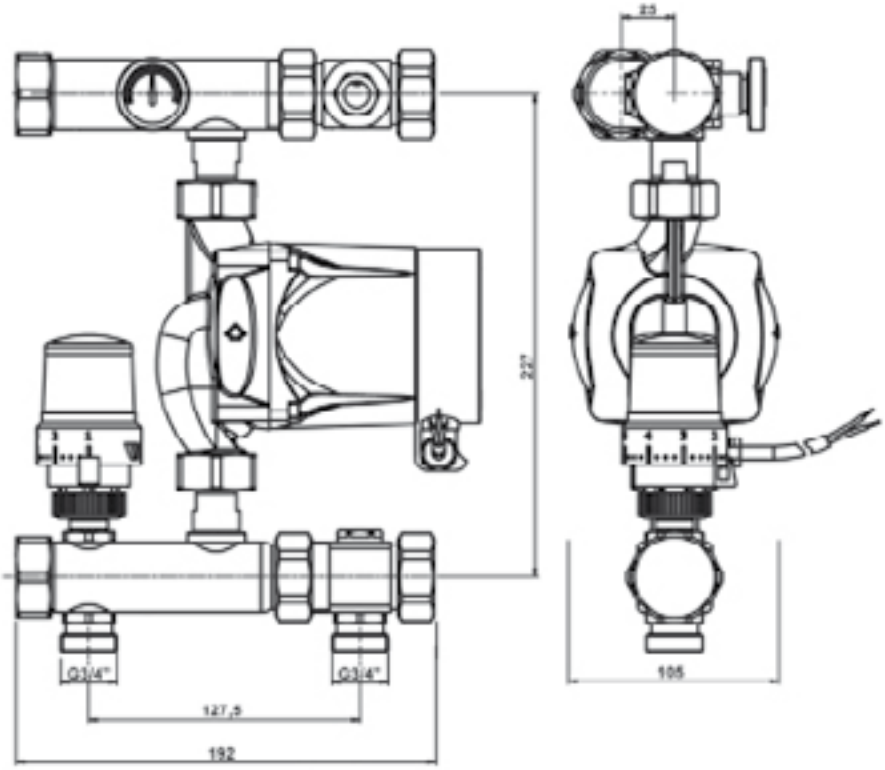
Mount the shunt directly on the manifold unit (remember the 4 rubber discs if mounting the shunt directly on the wall) with the pump to the left. The pump can also be mounted on the right side. In that case, move the thermometer with the sensor pocket and turn the pump. It may be necessary to turn the actual motor part on the pump. Mount the two 1" plugs at the opposite end of the manifold unit. If the allowable differential pressure of max. 50 kPa is exceeded, a pressure differential valve will have to be installed in the system.

Special instructions for thermostatic valves:

Mount the thermostat on the valve. Mount the dip pipe in the sensor pocket in the tee above the pump. Lock the thermostat in position 5 so that the flow temperature cannot exceed 50°C.

Roth UNIVERSAL Floor Heating Shunt

Measurements in mm

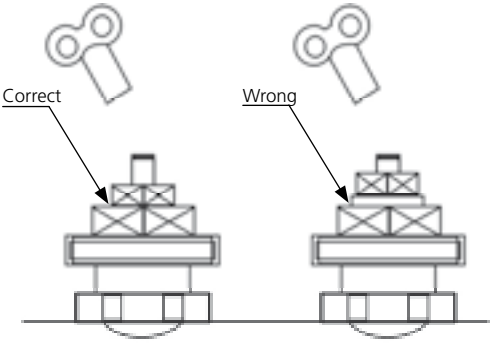


Roth UNIVERSAL Floor Heating Shunt

Start-up

Once the shunt parts are mounted on the manifold unit, close all valves on the return manifold.
Mount a filler hose on the end piece of the flow pipe and a drain hose on the return pipe. Next, begin flushing the hoses one at a time. Turn on the mains water, and open the valve to one hose at a time.
Open the drain hose on the return pipe, and flush the hose until no more air comes out. Close the valve, and continue to the next hose. Continue until all hoses are flushed.
The system will only function optimally when the presetting of the individual hoses has been completed (see computer presetting calculations by Roth or guide in the brochure for Roth manifold unit).
Ventilate the circulation pump and add heat to the system.
The adjustment valve on the primary side, i.e. the valve with the sensor element, makes it possible to adjust the primary flow into the shunt. This can provide more harmonic adjustment.

Please note! The fine thread of the valve must not be visible when presetting the hoses (see fig.)



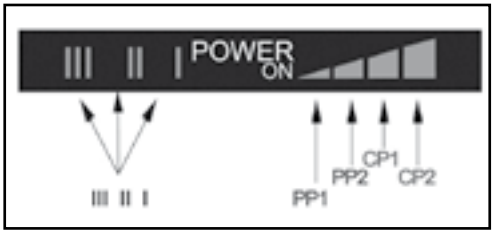
The pump can be automatically stopped and started by using the built-in potential-free relays in the Roth Touchline control unit (wireless) or Roth CABLE switchbox (wired). If the shunt has a thermostatic valve, the phase or neutral from the pump must be run through the potential-free relay in the adjustment.

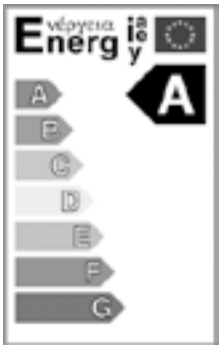
Initial adjustment

Chose settings 1-5 on the thermostat (see scale in the box showing the thermostat).
Adjust the pump so that the system has 5°C cooling. The pump should be adjusted as illustrated.

Pump:

The pump for the shunt is a Grundfos ALPHA2 L (limited edition) type, developed to achieve perfect comfort with minimum energy consumption. The pump comes with cutting edge technology with a Danish energy rating of A.
For this reason, Roth recommends running the pump in step CP1 for small systems and CP2 for large systems. This means that the pump runs according to a constant pressure curve.





Accessories

HVAC no.
End piece with drain and ventilation 401973.828

Also available as accessories for Roth shunts with floor heating manifolds are steel cabinets for free-standing or built-in installation.
See separate brochure for Roth manifold cabinets.

Roth Shunt with 3-way Valve and Alpha2 Pump

With thermostatic valve, electronic control unit, or weather compensator

The Roth shunt with the 3-way valve is used in conjunction with the FH manifold. This way it can be adapted to the desired number of hoses.

The shunt has a capacity of up to 230 m² and comes equipped with a Grundfos Alpha2 Limited pump. The shunt can be installed on the right and left sides of the GV manifold.

The shunt is developed for mixing the water when the heat source has a higher flow temperature than what is needed for the floor heat.

The shunt is available in 3 versions: 1) with a thermostat valve with flow sensor, 2) with a shunt control box for electronic adjustments with a sensor both in the flow and in the return flow, or 3) with weather compensation control for optimal control of flow temperature according to the outside temperature.

The shunt is developed to be able to retrieve the water from the heat source. This way, for some system types the primary pump can be completely omitted, or alternatively will only have to perform at a very low primary pressure.

Application: Floor heating with all heat sources

Technical description

Roth shunts with 3-way valves are delivered complete and are intended to be built together with the Roth Manifold Unit 1", from 2 to 12 hoses. They can work in conjunction with the NOVA+™ or Cable™ room controls.
The shunt can be used both for systems with manual and automatic controls.
The shunt includes 4 rubber discs to be used behind the suspension kit if mounted directly on the wall. This is not necessary when mounting in cabinet.
The installed Alpha2 L 15-60 pump can be designed for normal floor heating systems of up to 230 m² with a heating requirement of 40 W/m².

Thermostatic valve:

The thermostatic valve provides the floor heating system with simple and precise flow temperature control. The temperature is adjusted on the thermostat head at a range of 20-70° C and can be set at a maximum flow temperature such as 40° C to avoid malfunctioning.

Automatic control:

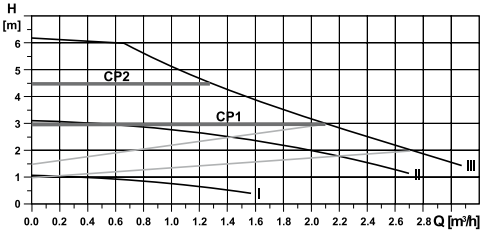
The shunt control box regulates according to the 2 sensors in the flow and return flow, respectively. The return temperature for the system can be adjusted from 15 to 40° C using the shunt control box. The flow sensor ensures that the temperature won't exceed the maximum flow temperature, which by the way can be set to 50, 55, or 60° C.

Weather compensation

Weather compensation regulates the flow temperature of the floor heating system according to the outside temperature. This ensures an exact and adapted temperature as needed.

The pump for the shunt can be connected to NOVA+™ or CABLE™ room control, which means that the pump will only run when there is a heating requirement.

Pumping curve



Technical specifications:

Shunt with 3-way valve, thermostatic valve	466210.218
Shunt with 3-way valve, automatic control	466210.208
Shunt with 3-way valve, weather comp.	466210.228

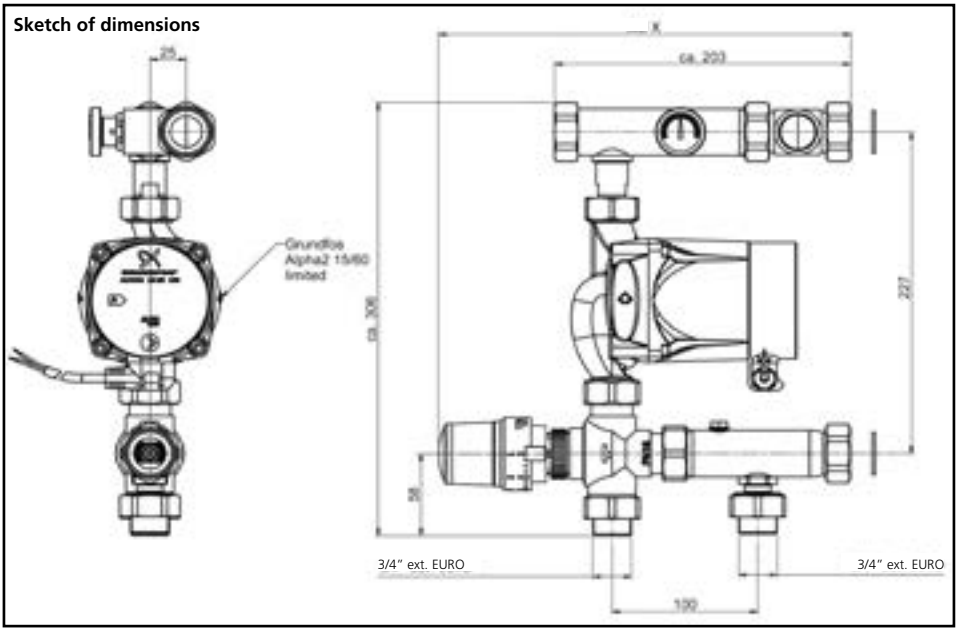
Shared specifications:

Max. operating temperature (primary)	90°C
Max. differential pressure (primary)	20-50 kPa
Max. operating pressure	10 bar
Pump	Grundfos Alpha2 L 15-60
Control area	See above
Primary Side above	¾" external (1" ext.)
Material	Brass Ms 58 and Ms 63
Gaskets	EPDM or AFM 34
Electrical outlet	230 V grounded

X measurement on sketch of dimensions

Shunt with thermostatic valve	275 mm
Shunt with automatic control	260 mm
Shunt with weather compensation	256 mm

Sketch of dimensions



Roth Shunt with 3-way Valve and Alpha2 Pump

Installation guide

Install the shunt directly on the manifold with the hose connectors. Remember the gaskets.
The shunt comes with standard mounting on the left side of the FH manifold. The pump can also be mounted on the right side. In that case, the thermometer is moved. It may be necessary to turn the actual motor part on the pump.
Use the 4 rubber discs when mounting the manifold directly on the wall. The discs are not necessary when mounting the manifold in a cabinet. If the allowed differential pressure of max. 50 kPa is exceeded, a pressure differential regulator will have to be installed in the system.
If flow control is desired on the primary side, install an adjustment valve in front of the shunt.

Special instructions for thermostatic valves:

Mount the thermostat on the valve. Mount the dip pipe for the sensor in the tee above the shunt, and mount the sensor in the dip pipe. If needed, set the thermostat head at a maximum allowed flow temperature.

Special instructions for automatic control:

Mount the adapter for the thermo motor on the valve and snap on the thermo motor. Mount the flow sensor and the included transition in the tee above the shunt. Next, mount the wire (black) from the box on the sensor. Remove the 1/8" plug on the return and mount the sensor. Next, mount the wire (white) from the box.

Special instructions for weather compensation:

Screw the thermo motor directly on to the valve. Mount the flow sensor and the included transition in the tee above the shunt. Next, mount the wire from the box on the sensor.

Pump:

The pump for the shunt is a Grundfos ALPHA2 L (limited edition) type, developed to achieve perfect comfort with minimum energy consumption. The pump comes with cutting edge technology with a Danish energy rating of A.
For this reason, Roth recommends running the pump in step CP1 for smaller systems and CP2 for larger systems. This means that the pump runs according to a constant pressure curve.

Start-up

Once the shunt parts are installed on the floor heating manifold, close all valves on the return flow manifold pipe.

Install a filler hose on the filler valve on the flow and a drain hose on the return flow. Next, begin filling/flushing the hoses one at a time. Open the filler valve and one hose at a time. Open the drain valve on the return and flush the hose until no more air comes out. Close the applicable hose and continue onto the next hose. Continue until all hoses are flushed.

The system will only function optimally when the presetting of the individual hoses has been completed (see presetting calculations by Roth).

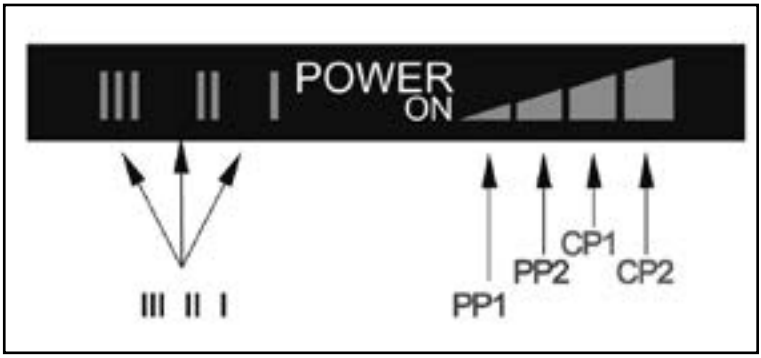
If a flow estimate has been made and a control valve has been installed in front of the shunt, the desired water volume can be set and controlled.

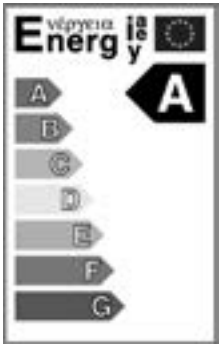
The pump can be automatically stopped and started by using the built-in potential-free relays in the Roth NOVA+™ or CABLE™ room control units.

Accessories
Roth ball valve kit 1"
HVAC no. 401973.858
Roth ball valve kit with thermometer 1", 0-60o C.
HVAC no. 401973.868
Roth adjustment valve for primary flow 4-36 l/min
HVAC no. 401973.818

To install these accessories, detach the 1" x 3/4" EURO from the shunt!
Also available as accessories for Roth shunts with floor heating manifolds are steel cabinets for free-standing or built-in installation.
See separate brochure for Roth manifold cabinets.

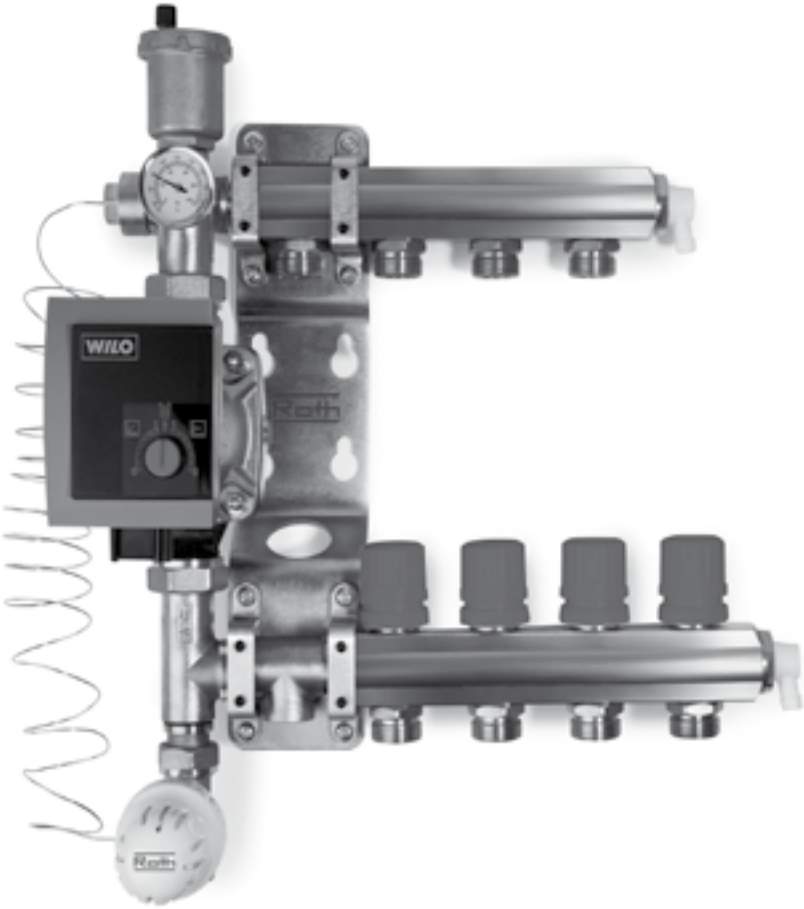
Important!
The Roth Manifold Shunt is intended for clean water systems. It may be necessary to use additives for antifreeze protection during the building period. In that case, use glycol (ethylene or propylene). This needs to be dissolved into a solution of max. 50% glycol. Never use any other antifreeze fluid without first consulting Roth Nordic Technical Support.





Roth ShuntUnit

With thermostatic valve, A-rated pump
and pre-assembled manifold



The Roth ShuntUnit is intended for small floor heating systems, both new constructions and renovation jobs, and has a capacity of up to 80 m², depending on the actual heat loss. The shunt is used in systems where the heat source has a higher flow temperature than needed for the floor heating system.

The shunt is delivered with an A-rated pump which ensures minimum power consumption. The pump is factory-assembled on the left side of the manifold but can easily be moved to the right side.

The Roth ShuntUnit is delivered with pre-assembled manifold with 1, 2, 3 and 4 ramifications prepared for installation of Roth room control.

Areas of use

Floor heating systems with all heat sources

Roth ShuntUnit

Technical description

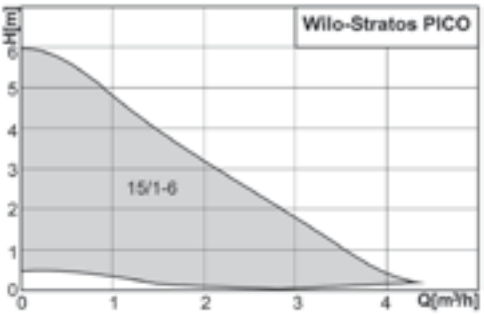
The Roth ShuntUnit is delivered complete with A-rated pump, thermostatic valve, thermometer, automatic air vent, fittings and pre-assembled manifold. The shunt is fully assembled except for air vent, flow valve and sensor element which are included separately in the packaging.

The shunt can be used as manual control or be fitted with all types of Roth room controls.

The thermostatic valve provides the floor heating system with a simple and precise flow temperature control. The temperature is easily adjusted on the thermostat head in the range from 20°C to 60°C depending on the heat loss and floor construction.

The shunt is delivered with an A-rated Wilo pump which ensures minimum electricity consumption. The pump has a capacity of about 80 m², depending entirely on the actual heat loss and the chosen floor constructions. The pump is factory-assembled on the left side of the manifold but can easily be moved to the right side.

Pumping curve



Technical specifications:

ShuntUnit with 1 ramification	HVAC no. 466212.110
ShuntUnit with 2 ramifications	HVAC no. 466212.120
ShuntUnit with 3 ramifications	HVAC no. 466212.130
ShuntUnit with 4 ramifications	HVAC no. 466212.140
Max. operating temperature	95°C
Max. differential pressure	50 kPa
Max. operating pressure	6 bar
Pump	Wilo Stratos Pico 15/1-6
Adjustment range	20-60°C
Connection on primary side	½" RG
Threads on ramifications ext.	EURO ¾"
Material	Brass CW614
Gaskets	EPDM
Fittings	Galvanized steel
Electrical outlet	230 V grounded

Scope of delivery

Manifold connectors are not included in the delivery but are available for floor heating pipes in all commonly used

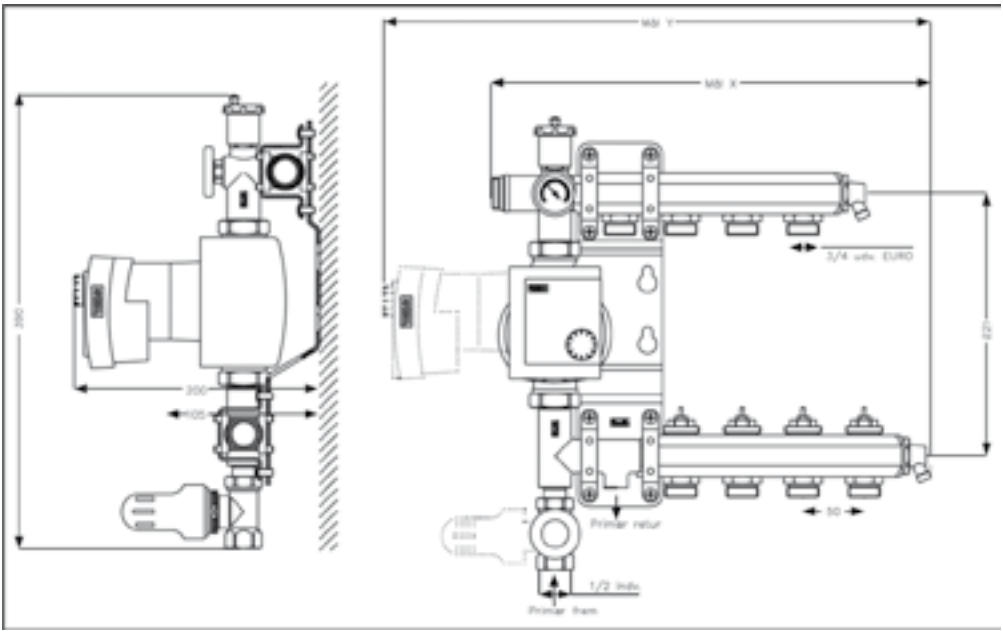
Accessories

466212.766	ShuntUnit extension with 1 ramification
401974.810	Roth manifold connector 10,5 mm x ¾"
401974.812	Roth manifold connector 12 mm x ¾"
401974.815	Roth manifold connector 15 mm x ¾"
401974.816*	Roth manifold connector 16 mm x ¾"
401974.817	Roth manifold connector 17 mm x ¾"
401974.818	Roth manifold connector 18 mm x ¾"
401974.820*	Roth manifold connector 20 mm x ¾"
046219.xxx	Roth manifold cabinets

* Can also be used for Alu-LaserPlus® pipes

Roth ShuntUnit

Dimension sketch (dimensions in mm)



Installation guide

Always check that all parts are included in the box and that all parts are intact. For environmental considerations, the pump is turned to make the box as small as possible, but it can, of course, be turned in the direction best suited. Mount the air vent, flow valve and sensor element/sensor. Please note that all threads have rubber gasket seals and do not need further sealing. Now, mount the ShuntUnit on the wall or in a cabinet.

Connect the floor heating hoses to the manifold using Roth manifold connectors, see the accessories section. If the allowable differential pressure of max. 50 kPa is exceeded, a pressure differential regulator will have to be installed in the system.

If the pump is to be on the right side

The pump of the Roth ShuntUnit is factory assembled on the left side of the manifold but can easily be moved to the right side. To do this, disassemble the fitting and pump and then unscrew the top part from the manifold.

Turn the manifold pipes so that the drain taps are to the left. Unscrew the sensor pocket from the top part, and reassemble it on the right side. Please note that all threads have rubber gasket seals and do not need further sealing. Then mount the top part on the right side of the top manifold, assemble the fitting to the top and bottom parts again, and mount the pump.

Sketch dimensions	Dimens. X	Dimens. Y
ShuntUnit with 1 ramification	200 mm	295 mm
ShuntUnit with 2 ramifications	250 mm	345 mm
ShuntUnit with 3 ramifications	300 mm	395 mm
ShuntUnit with 4 ramifications	350 mm	445 mm

Pump

The pump for the shunt is a Wilo Stratos Pico developed to achieve perfect comfort with minimum energy consumption. The pump comes with cutting edge technology with a Danish energy rating of A. The pump has a ventilation program capable of removing small amounts of air in the floor heating system. Roth recommends that the pump runs at a constant pressure, and should be set according to the hose lengths of the system. Normally a setting of 3-5 will be adequate to achieve optimum comfort, see sketch under start-up.

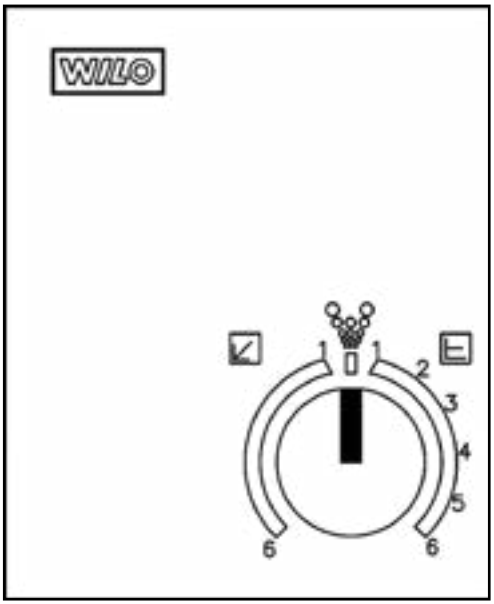
Start-up

Once the ShuntUnit is mounted on the wall or in the cabinet, close all valves on the bottom manifold. Begin flushing one hose by filling water into the flow pipe and draining return water through the floor drain. Continue the flushing until no more air comes out and close the hose. Repeat for the next hose and continue until all hoses are flushed. Then add pressure to the system.

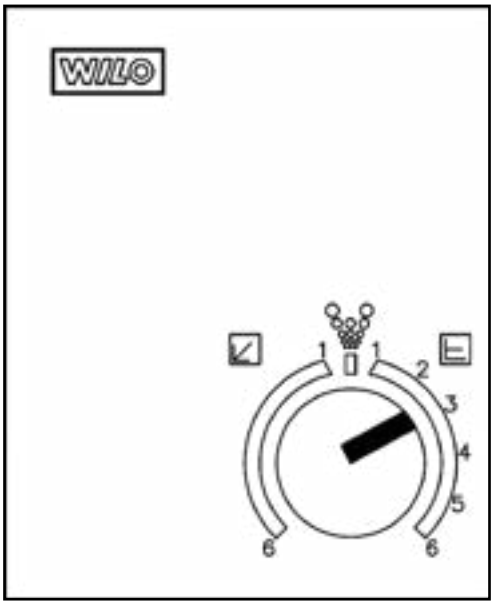
Start the pump, and let the ventilation program run for 10 minutes. Then set the pump at constant pressure, see drawing on the next page.

Roth ShuntUnit

Ventilation program for 10 minutes



Setting at constant pressure

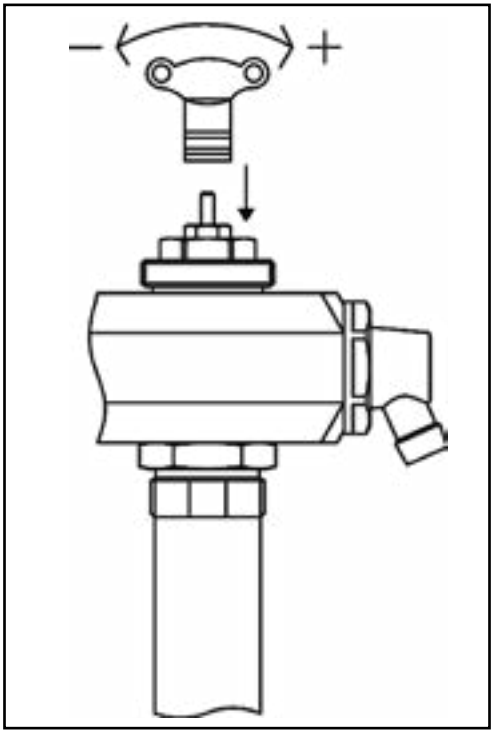


The system will only function optimally when the individual hose presetting has been completed.

All values of Roth presetting calculations are based on closed position. The valves on the return manifold are preset using the key provided.

The pump can be automatically stopped and started by using the built-in pump stop relays in Roth room controls.

The Roth ShuntUnit can only be used with water as a medium; however, it is permissible to use a glycol mixture of maximum 50%. The use of any other type of fluid or additive requires prior clarification with Roth Nordic.



Roth Mini Shunt

For adjusting floor heat in a single room

The Roth Mini Shunt is intended for floor heat control in a single room. The shunt can be connected "out in the system" just like a radiator for both single-stringed and dual-stringed systems. The shunt can be equipped with a Duo Manifold for connecting two circuits.

The mini shunt is used for mixing the water when the heat source has a higher outflow temperature than what is needed for the floor heat. The shunt is equipped with a max. flow limit of 45° C. (113° F.).

The mini shunt is available with either a thermostatic valve, controlled by a room sensor with 5 m capillary pipes, or a wireless room thermostat.

Areas of use

- Floor heating with normal boiler
- Floor heating with solid fuels
- Floor heating with normal condensing boiler
- Floor heating with district heating
- Floor heating with solar energy
- Floor heating with a heating pump

Technical description

The mini shunt has been developed for systems with only a single or two connected floor heating hoses in a room. For this reason, the mini shunt will often be the proper solution for the bathroom or when building an extension to or updating a home.

The shunt is designed for a system with one or two hoses totalling 90 meters or approx. 27 m². See schedule for capacity with different pipe dimensions and floor structures. If two hoses are desired, the shunt is equipped with a set of Duo manifolds.

It is important that both hoses are of equal length.

The flow features a built-in limiter that makes sure that the flow temperature in the floor heating circuit never exceeds 45° C. (113° F.).

The shunt with the thermostatic valve is controlled by a room sensor with a 5 meter capillary pipe, adjustable to 10° -26° C. (50-78.8° F.). The wireless shunt is controlled by a room thermostat, adjustable to 50-30° C. (41°-86° F.).
The shunt comes without a hose connection.

The hose is easily connected to the heating system. The shunt includes a 1-meter triple polar wire equipped with an EU plug. An approved grounded plug must be installed.

Roth Mini Shunt

Technical specifications

Roth Mini Shunt 466210.101
Max. operating temperature (primary) ..... 80° C. (176° F.)
Max. differential pressure (primary) ..... 1 bar (14.5 PSI)
Max. operating pressure .....10 bar (14.5 PSI)
Max. flow temperature ..... 45 °C (113° F.)
Room temperature adjustment range ..10-26 °C (50-78.8° F.)
Voltage supply ..... 230VAC, 50 Hz
Pump ..... VORTEX 152 BW - OT (23 Watts)
Pipe connection (primary) ..... 3/4" EURO
Pipe Connection (secondary) ..... 3/4" EURO
Roth Mini Shunt, Wireless..... 466210.301
Max. operating temperature (primary) .....80° C. (176° F.)
Max. differential pressure (primary) .....1 bar (14.5 PSI)
Max. operating pressure .....10 bar (14.5 PSI)
Max. flow temperature ..... 45 °C
Voltage supply ..... 230VAC, 50 Hz
Pump ..... VORTEX 152 BW - OT (23 Watts)
Pipe connection (primary) ..... 15 CU x 3/4"
EURO Pipe connection (secondary) ..... 3/4" EURO

Receiver:
Voltage supply 230 VAC, 50 Hz
Frequency ..... 433.92 MHz
Range .....approx. 25 meters inside building
Max. Contact load .....230 VAC (12A)
Number of thermo motors .....approx. 3
Encapsulation ..... Class II - IP44
Suppression ..... EN 300220-3, EN 301489
Network connection cable .....100 cm

Room thermostat:
Voltage supply Room thermostat ..... Lithium CR2430.3V
Battery usable life .....approx. 2 years
Frequency ..... 433,92 MHz
Transmission strength ..... < 10mW
Encapsulation ..... Class II - IP30
Damping ..... EN 300220-3, EN 301489
Temperature setting range ..... 5 - 30 °C (50-86° F.)
Exactness ..... 0.1 °C (32.18° F.)

Thermo motor:
Voltage ..... 230 VAC
Absorption effect 2W
Encapsulation ..... Class II - IP40 (waterproof)

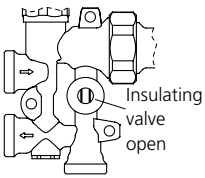
Installation guide

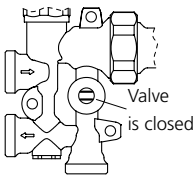
The mini shunt comes ready for installation in the included wall fittings. The wall fittings are mounted to the shunt using the supplied machine screws and distance pieces.

This is to ensure the availability of a min. pumping pressure of 1 kPa at the front of the shunt. Always flush the existing system prior to installing the shunt.
When installing the shunt in a single-string system, turn the conversion screw all the way until it stops (see illustration).

Prior to installing the thermostat part, adjust the flow temperature in the shunt. Make sure that the primary temperature is set at its normal level. Wait about 10 minutes, then measure the temperature in the floor heating shunt. As a rule of thumb, the flow temperature should be between 30o and 35o C. (86o and 95o F.)
for concrete floors and 40o-45o C. (104o-113o F.) for wood floor structures. (follow the floor manufacturer's instructions)
If the temperature is too high, the primary flow will have to be lowered on the presetting for the valve (see illustration). The temperature is reduced by turning clockwise. The thermostat is mounted on the valve. Make sure to press lightly while the hose connection is being screwed on. Use the handle to adjust the temperature as desired (see scale in box). The sensor/ Room Thermostat is mounted on the wall at a height of 1.7 meters in a representative location without the influence of heat bridges, drafts, or other heating sources.
The pump may cause some noise, so it is recommended to place the shunt in a location where it will not become a nuisance. Pressure testing and ventilation must be perforwith prior to use.

To optimize flushing and ventilation of the floor heating hose and the mini shunt, the shut-off valve can be closed while this is taking place. Open the valve again after flush and ventilation. See below



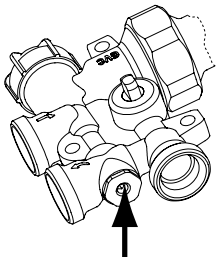


Max. capacity for the Mini Shunt in different floor structures

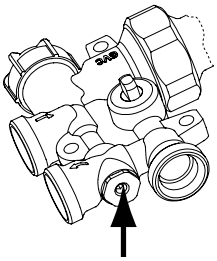
Pipe dim.	Floor structure	Pipe c-c measurement in mm	Number of ramifications	Max m²	Max pipe length
10,5	Compact system	152	1	7,5	50
10,5	Clima Comfort	75	1	3,7	50
16	Compact system	152	1	12	80
16	Compact system	304	1	24	80
16	Roth chipboard System	200	1	16	80
16	Roth Self-sustaining Heat Distrib. Plates	300	1	24	80
20	Embedded in concrete	300	1	27	90
20	Roth Self-sustaining Heat Distrib. Plates	300	1	27	90
20	Roth Combi Plate	300	1	27	90

Roth Mini Shunt

Set the mini shunt to single-string or dual-string systems. See drawings below.

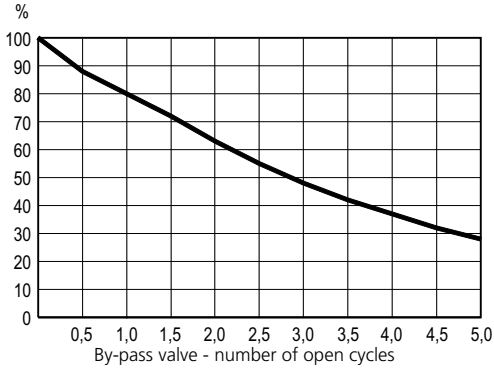


If the shunt is installed in a single-string system, partially or fully unscrew the by-pass valve (2.5 mm Allen key)

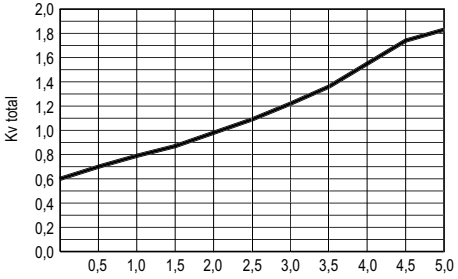


If the shunt is installed in a dual-string system, screw the by-pass valve (2.5 mm Allen key) all the way in.

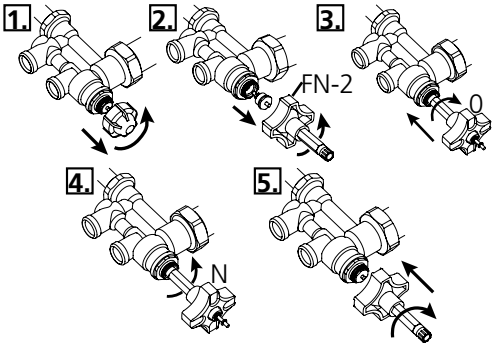
The following schedule shows the percentage of water that is passed by the mini shunt. For example, if the valve is turned all the way around three times, 48% of the water is passed by the shunt.



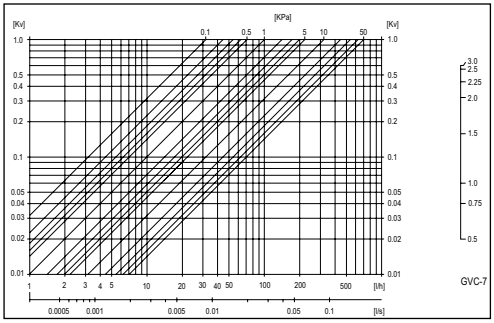
Here the CV value can be read at different by-pass valve e settings.



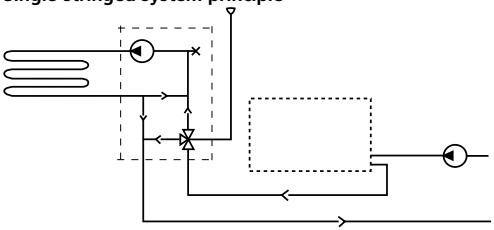
Changes in the flow temperature can be made by adjusting the mixing valve. See instruction manual.



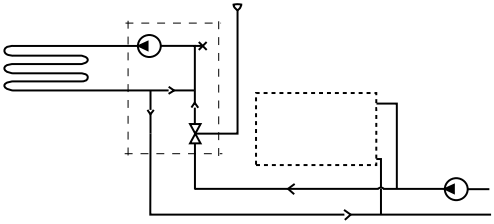
The diagram indicates pressure loss and CV values at different water amounts when the mixing valve is adjusted according to the desired flow temperature. For further information, see installation guide.



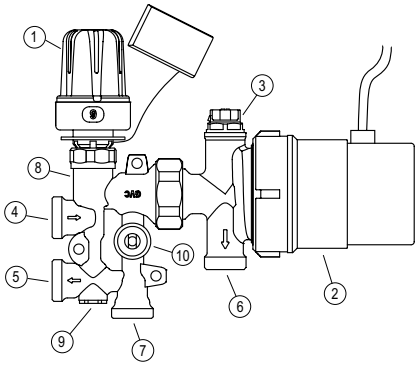
Single-stringed system principle



Dual-stringed system principle

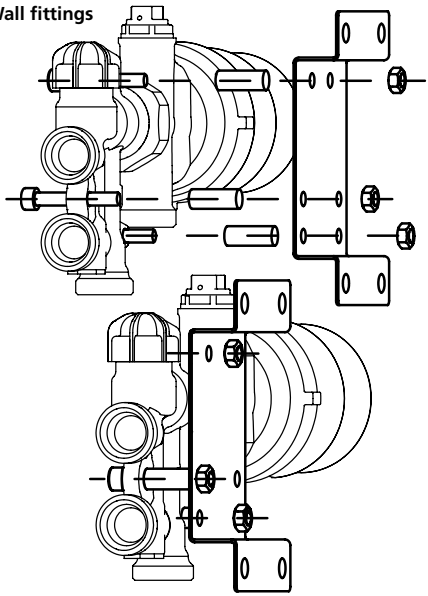


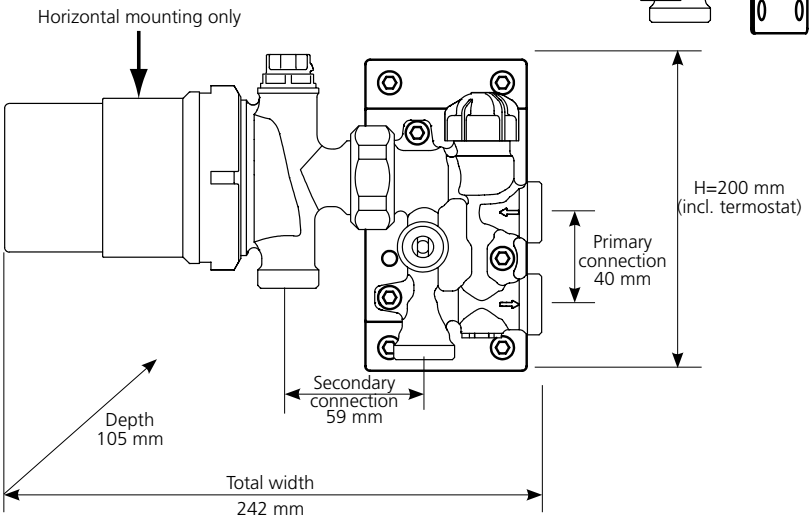
Roth Mini Shunt



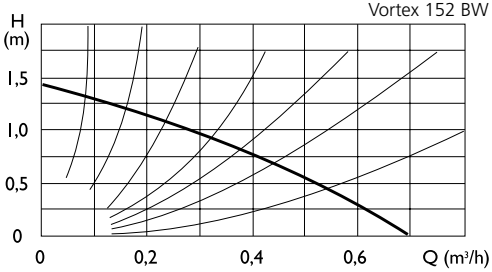
1. Thermostat valve with capillary sensor
2. Circulation pump
3. Ventilation screw
4. Flow, system
5. Return, system
6. Flow, floor heating
7. Return, floor heating
8. Control valve for water amount
9. By-pass valve for a single-string or a dual-string system
10. Shut-off valve

Wall fittings





Pump diagram



Operation and maintenance

Normally the surface temperature of the floor should not exceed 27o C (80.6o F.). For this reason, pay particular attention if there is a change in the flow temperature.

Accessories

Roth Duo Manifold	HVAC no. 046296.220
Roth Manifold Coupling 10.5 mm	HVAC no. 401974.810
Roth Manifold Coupling 16 mm	HVAC no. 401974.816
Roth Manifold Coupling 20 mm	HVAC no. 401974.820

Roth Wireless mini shunt control

Description

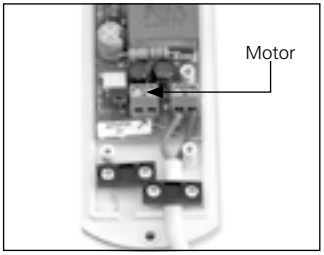
The Roth Wireless control is a complete system for controlling individual rooms in combination with the Roth Mini Shunt. The wireless control makes installation simple, both for new construction and for renovation jobs where it can be difficult to run lines. The wireless system provides for increased options when it comes to placing the room thermostat and the mini shunt. The room thermostat has a built-in reverser for night reduction.

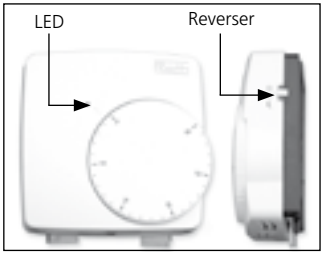
Technical specifications:

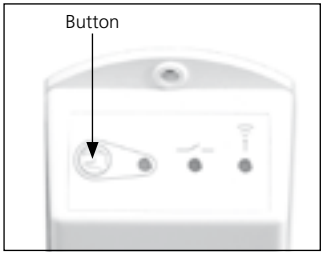
HVAC no.:	466210.834
Mains voltage:	230 V
Network wire (length)	1.4 m
Battery voltage:	2 lithium batteries, CR2430 / 3 V.
Battery lifetime:	approx. 2 years
Protection class, receiver:	IP 44
Protection class, thermostat:	IP 30
Range:	approx. 25 meters
Broadcast frequency:	433.92 MHz
Measurements, receiver:	L=170 mm, W= 50 mm, H=28 mm weight=190 grams
Measurements, thermostat:	L=80 mm, W= 80 mm, H=31 mm weight=85 grams

Roth Wireless mini shunt control

Installation guide for the Roth Wireless mini shunt control







1. Dismantle the receiver (remove 2 screws) Connect the thermo motor to the clamp labelled "ACTUATOR".

2. Connect the receiver to 230 V., then depress the button for approx. 4 sec. The green LED light should turn on and remain on (you now have 30 sec. to perform step 3).

3. Hold the room thermostat close to the receiver (remember to remove the plastic strips from the batteries). First push the reverser to OFF, then to ☼ (ON). During the next 5 sec., the thermostat will transfer its address to the receiver. Meanwhile, the green LED will blink for each signal received. In the ☾ setting, the thermostat makes a night reduction to 4° C. (39.2° F.).

4. You can now test the reception by the receiver of the radio signal.

a. By pressing the button repeatedly, you can select automatic function (yellow LED turns off).

b. Place the room thermostat in the room where it is to be set up.

c. Close all doors etc. between the receiver and the thermostat.

d. Turn the button on the thermostat down to 5o and wait (10 sec.) until the red LED blinks (on the thermostat).

e. On the receiver, make sure that the red LED light is off (no heating requirement)..

f. Turn the button on the thermostat up to 30o and wait (10 sec.) until the red LED light blinks (on the thermostat).

e. On the receiver, make sure that the red LED light is on (heating requirement exists).

Repeat steps d through g 2 to 3 times to make sure that the system is working properly.
- If all tests are OK, everything is alright.
- If a single one of the tests does not go well, the system is right on the borderline for reception, and the placement will have to be reconsidered.

If NONE of the tests went well, the distance between the receiver and the thermostat is too great, and you will have to choose a new location.

Function and error detection schedule

Yellow	Red	Green	
0	0	0	Automatic HEAT FROM
0	1	0	Automatic HEAT TO
1	0	0	Manual override HEAT FROM
1	1	0	Manuel HEAT TO
0 or 1	0 or 1	Rapid blinking	Signal reception, 4 rapid blinks
0 or 1	0 or 1	1	Awaiting report signal
0	0	Slow blinking	ERROR, see description below:
Error detection			- Check the batteries on the thermostat - Check the distance between thermostat and the receiver - There is interference from other devices within 50 cm from the receiver - There is interference from other devices on the 433.92 MHz frequency (permanent broadcast)
Press the button to if none of the LEDs turn on			- Check the connection to the receiver - Check the electric supply (230VAC)

We reserve the right to engineering changes without prior notice.

Roth Touchline™ Wireless Control

Technical description

Roth Touchline is an intelligent control system which is easy to install. The room thermostat only measures 19.5 mm and is available in white or black high gloss. The wireless thermostat comes with cutting edge technology and is available in a standard battery version with or without an infrared floor sensor or in a 230 V version. The system is based on two-way wireless communication.

The room thermostat has a large display which shows a large number of data and where settings can be made. The control unit is available for eight or twelve channels with a maximum of 18 thermostats connected. LEDs on the control unit show calls for heat and error messages. LAN connection is possible so that the system can transmit data and be controlled via an iPhone.

Areas of use: **• Floor heating systems** **• Radiator systems** **• Floor cooling systems**

Roth Touchline™ Wireless Control

Room thermostats with display (battery operation or 230V permanent power supply)

The room thermostat is easily mounted on an inner wall using the screws and rawlplugs provided. The transmission range is up to 40 regular houses, and the room thermostat automatically adapts transmission strength after installation to save battery. The wireless room thermostats have a high gloss surface with sensor keys. Room thermostats come in white or black with battery operation or 230V connection. The room thermostat has a large display, and in addition to the normal function as room thermostat, the individual thermostat allows full configuration of all system functions and settings via the user and service menus.

The room thermostat can be programmed to reduce temperature up three times per day in one room, all rooms or in zones (up to three). Intelligent heating can be selected so that the system registers when to start heating to achieve the correct temperature at the time set.

Each individual room thermostat has four operating modes, switched off, reduced, normal, and three preprogrammed timer programs. If the cooling signal is on, the system automatically changes between heating and cooling. The system can be connected to its own dew point sensor and requires no external signal for heating/cooling.

The room thermostat features several types of locking levels, e.g. hotel function or a "public" function where all functions are locked with a code. Multi-room thermostats can be interconnected and can therefore operate with an average temperature for e.g. large halls etc.

When the display is activated, the desired room temperature can easily be changed, and at the same time, the user is receives information about the relative energy consumption via the eco indicator.

Room thermostats with display and infrared floor sensor (IR)

In addition to all the functions of the room thermostat with display, the IR room thermostat can measure the floor temperature using an infrared floor sensor. The infrared sensor technology ensures comfortable surface temperature and can be set between 15°C and 30°C.

Control unit with 4, 8 or 12 channels

Mount the control unit on the DIN rail provided. The wiring is easily connected with push clamps and the connection is described in detail with symbols on the control unit. The control unit offers 4, 8 or 12 channels with a maximum of 6, 12 or 18 thermo motors, each to be connected to its own push clamp. Thermo motors are as a standard set at "normally closed" but can be changed to "normally open". Furthermore, the unit has potential-free relays for pump, boiler, heat pump and cooling system control. In addition, the unit has several in- and outlets that can be configured according to the task. Up to three control units can be interconnected wirelessly in one system.

The control unit has a built-in pump, valve exercise function and a unique function which allows for the ambient temperature and adjusts the effect to the thermo motors. This lowers consumption and increases the lifespan of the motors.

It is possible to choose between three different control algorithms (on/off and 2PVM), which ensure optimum control of all types of floor heating.

It is also possible to choose an outlet as by-pass function for operation with heat pump.

The system also offers a function which ensures that a new system starts up gently to prevent floors from drying out too quickly, resulting in damage.

The LEDs on the front of the control unit provide information about what channel calls for heat and whether pump, boiler or heat pump is activated, malfunction, link test, links to zones, etc.

The LAN connection option enables the system to transmit data and be controlled via a PC (only via internal LAN/WLAN) or an iPhone (both via internal LAN/WLAN and the Internet). The control unit can easily be upgraded to the most recent version or be extended to include new functions by means of a mini SD card.

The packaging includes a short installation guide and a CD with a user manual describing all functions. The packaging also carries a QR code which links to a Touchline installation video.

Easy connection

Room thermostats are easily connected to the control unit by pressing the channel button on the control unit once and then holding the buttons down and for about 10 seconds on the room thermostat.

Accessories

- External antenna. To be used under adverse transmission conditions at the control unit. May be necessary if the control unit is mounted in a steel cabinet
- Repeater. Used to amplify the range between control unit and room thermostat.
- Power LAN. Used to connect the control unit to the router or switch of the building when they are located elsewhere in the building. Power LAN uses the building 230V electrical installation as network.
- GSM module. Used to operate the C/O (changeover) input to the system via SMS.

Roth Touchline™ Wireless Control

Technical specifications

Touchline Control Unit

HVAC no.:
4 channels 466393.004
8 channels 466393.008
12 channels 466393.012
Voltage supply 230VAC
Number of outlets and voltage ..... 6/12/18 24V DC

Max. continuous load:

4 channels ..... 6 thermo motors
(2 channels of each 2 thermo motors and 2 channels of each 1 thermo motor)
8 channels ..... 2 thermo motors
(4 channels of each 2 thermo motors and 4 channels of each 1 thermo motor)
12 channels ..... 18 thermo motors
(6 channels of each two thermo motors and 6 channels of each 1 thermo motor)

Protection class ..... II(EN60730) Transmission
Frequency ..... 868 MHz
Range (up to) ..... 40 m reg. building)

Max. load pump relay .....230V and 4A, 1A potential free
Max. load boiler relay .....230V and 4A, 2A potential free
Approvals ..... CE
Network cable ..... 85 cm

Ambient temperature ..... 0-60° C
Ambient ..... 5-80% RH
Storage/transportation temperature ..... -25-+70°C
Protection class IP30 (EN60529)

Dimensions incl. transformer
4 channels ..... 303 mm x 74 mm x 52 mm
8 channels ..... 368 mm x 74 mm x 52 mm
12 channels ..... 433 mm x 74 mm x 52 mm

Weight incl. transformer:
4 channels ..... 1.3 kg
8 channels ..... 1.5 kg
12 channels ..... 1.7 kg

Energy consumption during operation:
4 channels ..... max. 27W
8 channels ..... max. 40W
12 channels ..... max. 60W

Touchline Room Thermostats

HVAC no.:
Room thermostat with display, white 466393.100
Room thermostat with display, black 466393.102
Room thermostat with display and IR, white 466393.120
Room thermostat with display and IR, black 466393.122
Room thermostat with display and 230V connection, white 466393.110
Room thermostat with display and 230V connection, black 466393.112

Voltage supply (battery operation) ..... 2 x 1.5V AAA
Battery lifetime: ..... >1.5 years
Protection class ..... III (EN60730)

Voltage supply (permanent power supply) ..... 230V AC
Energy consumption stand-by 0,13W
Protection class ..... II (EN60730)

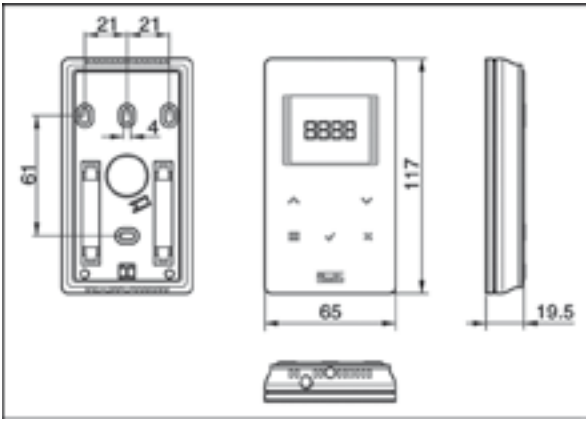
Room temperature, setting range ..... +5…+30°C
Comfort floor temperature, setting range ..... +15...+30°C
Floor temperature, max setting range ..... +26...+35°C
Exactness (solution) ..... ±0.1K/±0.5K.
Time constant (lag time) ..... About 10 min./12....20 min.
Sleep mode ..... about 50 s.
Transmission interval ..... 1-10 min.
Transmission interval after change of setpoint ..... 1 min.
Actuation time (wake-up time) ..... <2 s.
Max. time for mandatory data updates from wireless control unit ..... 10 s.
Stand-by display without operation ..... max. 5 s.
Stand-by after program, user level ..... 30 s.
Stand-by after program, service level ..... 20 min.
Transmission frequency 868MHz
Range (up to) ..... 40m (reg. building)
Approvals ..... CE
Ambient temperature ..... 0-55°C
Ambient humidity ..... 5-80% RF
Storage/transportation temperature ..... -25-+70°C
Protection class IP20 (EN60529)
Dimensions (h x w x d) ..... 117x65x19.5 mm
Weight 150g

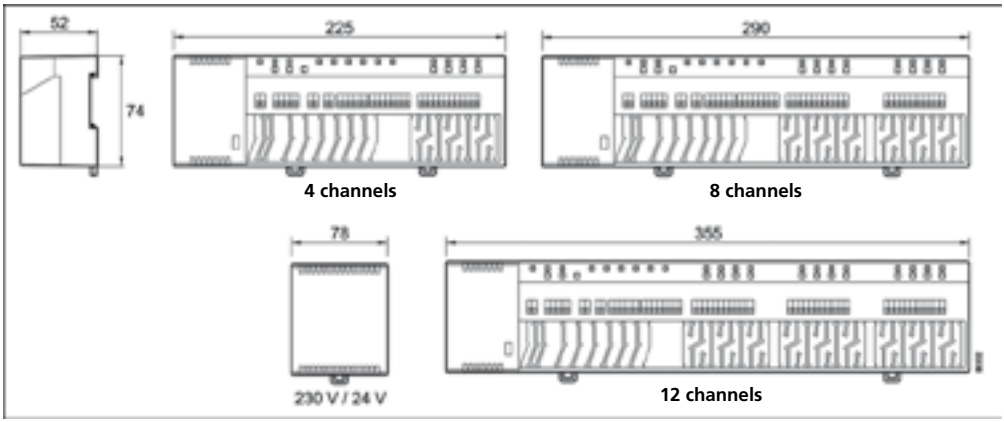
Accessories

External antenna for Touchline
HVAC no. 466393.130
Repeater for Touchline
HVAC no. 466393.135
Roth thermo motor
HVAC no. 466275.424
Power LAN
HVAC no. 466393.145
GSM module
HVAC no. 466393.150
Dew point sensor
HVAC no. 466393.155

Roth Touchline™ Wireless Control

Measurements in mm





The total length is equal to the length of the control unit + the length of the transformer

Roth CABLE™ Wired control

The Roth CABLE™ control system is a complete 24 V wired system that can be used wherever individual control and adjustments of floor heating systems is desired.

The CABLE™ system consists of a Control Box plus three different types of room thermostats: Standard, Institution, and Multi. All components are manufactured in a modern, timeless design that fits all types of construction.

Areas of use: **• Floor heating systems • Panel heating systems • Radiator systems**

Technical description

The Roth CABLE™ control system is a complete 24 V wired system that can be used wherever individual control and adjustments of floor heating systems is desired. The CABLE™ system consists of a Control Box plus three different types of room thermostats: Standard, Institution, and Multi.

The thermostat is placed in the room. Via the Control Box, it is connected to a thermo motor located on the respective valve on the manifold. When the thermostat calls for heat, the motor will open and let hot water out in the circuit.

The components are inter-connected via a normal 0.35 mm2 line plus 4 conductors. The control box and the thermostats are equipped with regular screw terminals for connecting the wires. A relays for pump stop is standard equipment for the control box. The relay starts and stops the pump when heat is needed.

All components are manufactured in a modern and timeless design.

Roth CABLE™ Wired control

Roth CABLE ™ Coupling Box

The box is equipped with 12 NC (normally closed) outlets and entries for room thermostats. A max. of 14 thermo motors can be connected with a max. of 3 per outlet. Max. 5 outlets can be inter-connected by making a jumper between them. The connection between the Control Box and the thermostats takes place via screw terminals with a 4-polar 0.35 mm2.

The Control Box is connected to a 230 V AC outlet and is supplied with 24 V AC through the built-in transformer. The box is equipped with a pumping relay for starting/stopping the circulation pump.

For further description plus installation, please refer to the Installation and User Manual included in the box.

Roth CABLE™ room thermostats

All are electronic thermostats equipped with mechanic min. and max. limits for temperature settings. In addition, all come equipped with a diode behind the front that lights up when heat is needed.

For further description and installation, please refer to the Installation and User Manual included in the packaging.

Roth CABLE™ Standard room thermostat with the functions described above. Features a turn dial for setting the temperature. Used any place where a simple and easy-to-use thermostat is desired.

Roth CABLE™ Multi room thermostat also features the option of connecting a floor sensor. The floor sensor provides the option of limiting the min. or max. floor temperature (e.g., min. in the case of tiled flooring; max. in the case of wood floor in the living room, etc.).
Also includes manual reverser for night reduction (4o C./39o F.).

The **Roth CABLE™ Institution** has the same specifications as Multi, but without direct access to the operating buttons.
Used where it is not desirable that the user is able to change the thermostat settings, such as at institutions, etc.

Technical specifications

CABLE™ Control Box

HVAC no. 466395.012
Supply voltage ..... 207–253 V AC
Number of outlets 12
Outlet voltage ..... 24 V AC
Max. effect per outlet ..... 3 motors for each outlet (14 motors total).
(max. 5 motors per room thermostat).
Max. load pump relay ..... 230V AC 2A
Ambient temperature ..... 0-50° C (32°-122° F.)
Transportation temperature ..... -20-60° C (-4°-140° F.)
Encapsulation ..... IP 20
Network cable ..... 2 m
Weight: 1.5kg
Fuse ..... F 0.2 A

CABLE™ room thermostats

HVAC no.:
Standard 466395.100
Institution 466395.110
Multi 466395.140
Supply voltage ..... 24 V AC (50 - 60 Hz)
Temperature setting range ..... 6-30° C (42.8°-86° F.)
Ambient temperature ..... 0-50° C (32°-122° F.)
Transportation temperature ..... -20-60° C (-4°-140° F.)
Encapsulation ..... IP 20
Weight 100g

CABLE™ floor sensor

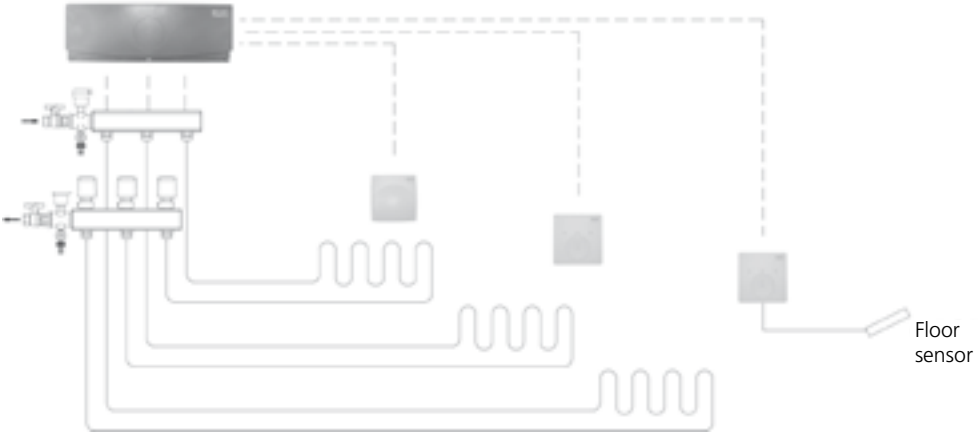
HVAC no. 466395.860
Type ..... NTC 30 kohm 20° C (68° F.
Temperature range ..... 20-45° C (68°-113° F.)
Cable length 3m

Accessories

Pumping relay for replacement
HVAC no. 466395.820
CABLE™ frame for room thermostats
HVAC no. 466395.850

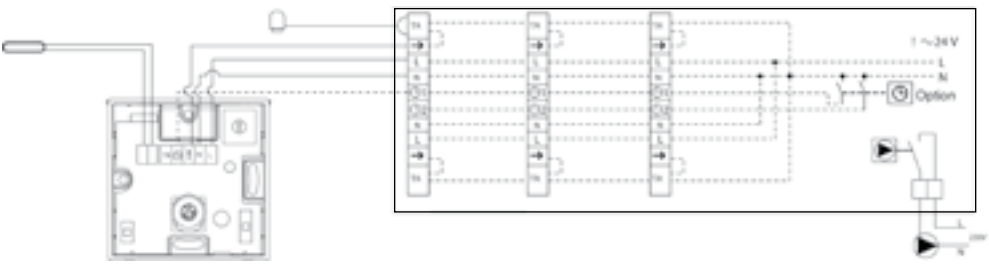
Roth CABLE™ Wired control

Connection

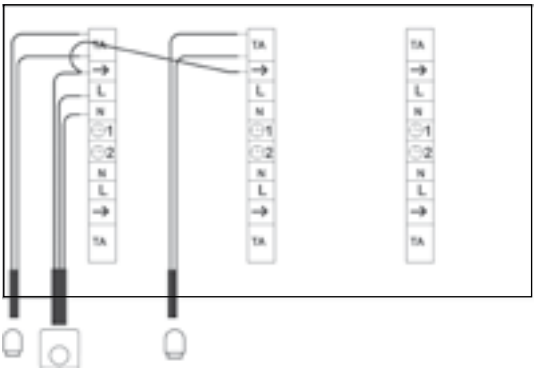


Power connection

System diagram



Connection of several thermo motors on one room thermostat (max. 5 thermo motors for each room thermostat).



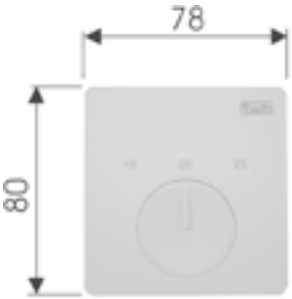
Roth CABLE™ Wired control

Dimension sketches:
Measurements are in mm

Control Box

Depth: 61 mm

Standard

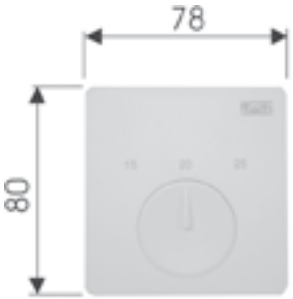


Depth: 28 mm

Institution

Depth: 31 mm

Multi



Depth: 28 mm

Roth Manifold Cabinet

Installation Guide

Description

Used together with the Roth Floor Heating Manifold and any shunt groups for floor heating systems.

Can also be used in conjunction with the Roth manifold TT and the Roth Combi Manifold for installation of domestic water systems or radiators. The manifold cabinets are available in three different sizes for built-in or free-standing installation.

Areas of use

- Floor heating systems
- Installation of domestic water systems and radiators

Technical description

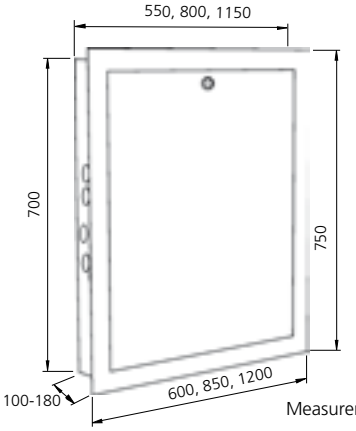
Roth manifold cabinets are manufactured from 1mm galvanized steel plates with the exterior in RAL 9010 white varnish.
The cabinets are available in three different depths: 550-, 800, and 1050 mm. The height is 700 mm.
The depth of the built-in cabinets is 100 mm, adjustable to 180 mm.
The depth of the free-standing cabinets is 150 mm.
The cabinets feature mounting rails with four 8 mm adjustable screws that make it very easy to attach the manifold in the cabinet in a stable fashion.
In the bottom, holes have been made for pipes, and additional holes can be punched in the sides as needed.

Roth Manifold Cabinet

Technical specifications

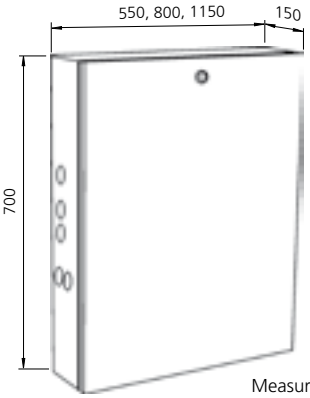
Roth Manifold Cabinet 550 INT
HVAC no. 046119.236
Measurements
..... Height 700 mm, width 550 mm, and depth 100-180 mm
Roth Manifold Cabinet 800 INT
HVAC no. 046219.238
Measurements
..... Height 700 mm, width 800 mm, and depth 100-180 mm
Roth Manifold Cabinet 1050 INT
HVAC no. 046219.242
Measurements
... Height 700 mm, width 1050 mm, and depth 100-180 mm
Roth Manifold Cabinet 550 EXT
HVAC no. 046219.266
Measurements
..... Height 700 mm, width 550 mm, and depth 150 mm
Roth Manifold Cabinet 800 EXT
HVAC no. 046219.268
Measurements
..... Height 700 mm, width 800 mm, and depth 150 mm
Roth Manifold Cabinet 1050 EXT
HVAC no. 046219.272
Measurements
..... Height 700 mm, width 1050 mm, and depth 150 mm.

Manifold Cabinet, built-in INT



Measurements in mm

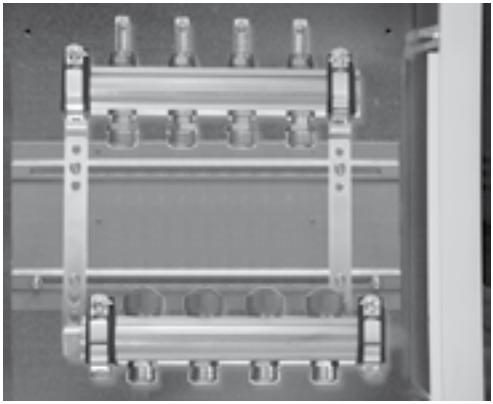
Manifold Cabinet, free-standing EXT



Measurements in mm

Installation guide

The cabinet is screwed tight along the sides or on the back panel.



The manifold is installed using the adjustable screws.

Roth Mobile Electric Boiler 9 kW

Complete Roth Mobile Electric Boiler 9 kW

Complete, ready-assembled, transportable mobile electric boiler with overflow container, circulation pump, safety valves, a 1" flex hoses for direct attachment to the heating system, floor board, carrying handles, thermometer, and constant flow temperature control.

The Electric Boiler is intended for a system where quick/temporary start-up of the system is desired. An example is when the system is pressure tested with water and there is a subsequent frost risk.

If only one phase is used, the effect is reduced to 4.5 kW.

Instructions, installation guide, and operating and maintenance manual included.

Technical specifications

HVAC no.	345080.090
Circulation pump	Myson CP-63, 230 V, 110 W
Boiler	9 kW (2 x 4.5 kW), 400 V, 13 amps, IP 44
Max. operating temperature	85o C. (185o F.) Adjustment range 30-85o C. (86-185o F.)
Overflow	8 lifters
Safety valve opening pressure	1.5 bar (21.76 PSI)
Connection dimension for flex hoses	1" int.
Weight	38 kg (84 lbs.)
Measurements	L=720 mm W=300 mm H=500 mm

Roth Weather Compensation for the Floor Heating Shunts

Programmable digital weather compensation for controlling the Roth UNIVERSAL and PRO Floor Heating Shunts. The weather compensation regulates the flow temperature in the floor heating system according to the outside temperature.

- Weekly programs
- 9 preset programs and 4 user programs
- Unlimited memory
- Control adapted to the outside temperature

Roth Weather Compensation

SPECIFICATION

Temperature reading exactness	0,1° C (33.8° F.)
Surrounding temperature	0° C to 50° C (32° F. to 122° F.)
Control characteristics	Non-linear PID. Smart 3-point motor
IP-class	30
Supply voltage	230 VAC +/- 10% 50Hz
Outlets:	
Pump	Relay => 16A/250 VAC (potential-free)
Mixing valve	2 triacs => 75W max
Sensors:	
Outdoor sensor	CTN 10K (class II)
Floor sensor	CTN 10K (class I)
Software version	Shown when control is shut off

DISPLAY

1. Control form (mode)
2. Outside temperature if 6 lights up, or time or offset
3. Vacation/holiday setting indicator
4. Pump indicator
5. Water temperature of 6 lights up, or estimated temperature
6. Measured temperature indicator
7. Program graphics

USER GUIDE

Use the and keys to change mode.

Comfort mode
Under this setting, the system will run with constant comfort temperature. The water temperature and the outside temperature will be constantly shown. By pressing , you will be able to see the estimated water temperature and the offset water temperature. This offset temperature can be adjusted with the and the keys (default setting 00.0). The new estimated temperature will be shown.

Auto mode
Under this setting, the system will follow the program settings Press to see the program followed by the zone in question. The water temperature and the outside temperature will be constantly shown. By pressing, you will be able to see the desired estimated water temperature.

Reduced mode
Under this setting, the system will run with a constantly reduced temperature. The water temperature and the outside temperature will be constantly shown. By pressing , you will be able to see the estimated water temperature and the offset water temperature. This offset temperature can be adjusted with the and keys (default setting 00.0). The new estimated temperature will be shown.

Vacation/holiday mode
Under this setting, the system is able to run with a reduced temperature for a limited period of time (e.g., vacation/holiday period).
To access this setting, press Reduced mode, then "The suitcase" will be shown. The duration of the period can now be adjusted with the and the keys ("H" for hours; if more than 24 hours, then "D" for days). Once the period is over, the thermostat will revert to the Auto mode.
If you want to interrupt this period, adjust the duration to "no". The temperature used under this setting is the same as the one defined under reduced mode.

Stop mode
Use this setting to shut off the system. The software version will be shown for 5 sec. before complete shutdown. Strike any key to start up the system again.

Setting the time menu
Under this setting, you can adjust time and date.

Press to adjust minutes with the and the keys.
Press to adjust the hours with the and the keys.
Press to adjust the day with the and the keys.

Program menu
Under this setting, you can make a weekly program.

Roth Weather Compensation

PROGRAM EDITING

By pressing the , the program will begin to flash.

With and , you can select a preset program or a user program.

Use and to see other program selections.
Timer.
Shows the daily program.

If you select a preset program, **"P1" to "P9"**, or a user program, **"U1" to "U12"**, and press , this program will be followed in the Auto mode setting.

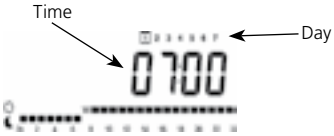
Description of preset programs:

P1: Early morning, evening, and weekend
P2: Early morning, late morning, evening, and weekend
P3: Day and weekend
P4: Evening and weekend
P5: Early morning, evening (bathroom)
P6: Early morning, afternoon, and weekend
P7: 7 a.m. to 7 p.m. (office)
P8: 8 a.m. to 7 p.m. (business)
P9: Weekend (vacation/holiday homes)

User programs - setup

The key sets the temperature for the day that is flashing

The key sets the temperature for the day that is flashing



First of all, select a user program (U1 to U12) with the and the keys. Press – the first beam in the program will begin to flash. Then select which temperature (or with the keys) at the selected time.
Use the and the keys to move the flashing beam to the desired day, then easily adjust to the desired temperature setting. When the correct day is selected, press to jump to the next day. When is pressed on the 7th day, the display will return to the main menu. The user program that was entered will not be followed if the control is set to the Auto

PUMP FUNCTION

The pumps is interrupted
- When the thermostat has not reacted for 30 minutes
- When the valve ha been closed for 30 minutes (no heating requirement)

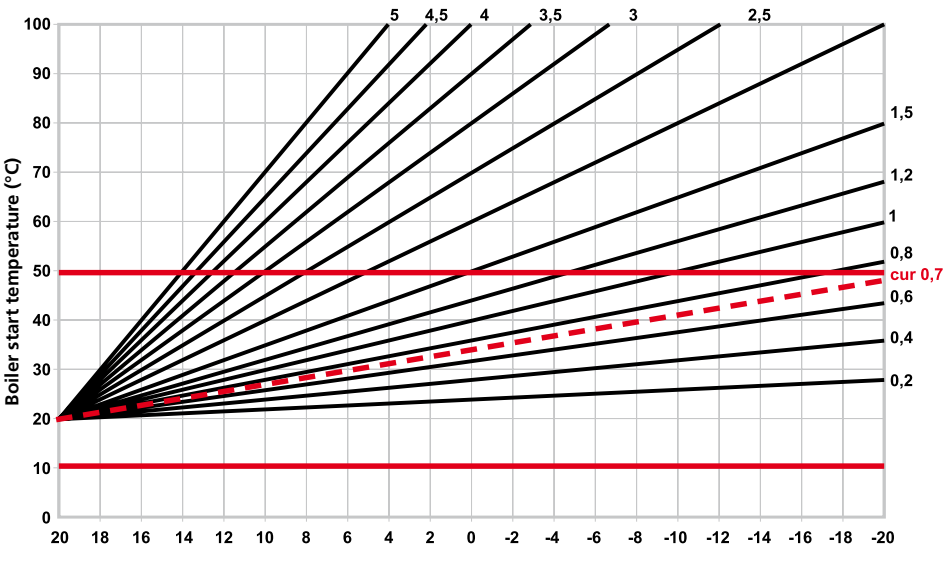
Note: The pump and the valve will be activated for 1 minute each day if they have been inactive for 24 hours and the stop mode is activated.

INSTALLATIONSPARAMETER

To gain access to the installation parameters, select Comfort mode and depress for approx. 10 sec. When the logo is shown, use the and the keys to view the parameters that are adjustable.
To adjust a parameter, press . The parameter will flash and can now be adjusted with the and the keys.
Press to confirm the new setting (press and simultaneously to restore factory settings). When finished, press to return to the main menu.

Roth Weather Compensation

INSTALLATION PARAMETERS			
Name	**Parameter description**	**Default values**	**Other values**
Cur	Control curve value, see diagram below Dependent on temperature measured by outdoor sensor.	0.7	Adjustable: 0 to 5 In the case of a poorly insulated building, the value is adjusted
Hi	Max. allowed water temperature	70° C. (158° F.)	Adjustable: Lo to 100°C. (212°F.)
Lo	Min. allowed water temperature	10° C. (50° F.)	Adjustable: 0/32 to Hi o C./F.
°C, °F	°C or °F shown on display..	°C	°F
12h /24 h	12h am/pm or 24-hr. shown on display	24h	12h
Clr	Press for 10 sec. to reset all settings to factory settings.		
Pump	Select YES to motion the pump for 1 minute each day if the pump has been out of use for more than one day.	YES	NO
Room	Usually open (Open) or (Closed). Room thermostat connected.	NO	NC
Dry	7-day special drying program (first start-up after installation of control). The display will show the number of days before the drying program finished . The first 3 days (day 7, 6, 5), the temperature will be kept at 25° C. (77° F.) The next 4 days (day 4, 3, 2, 1), the temperature will not exceed the set max. temperature (Hi).	With the key, the 7-day drying program. With the key, the drying program (O dry).	



Roth MultiPex® Pipe System

Product Range

... living full of energy!

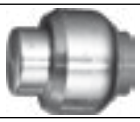
Roth MultiPex® Pipes

ITEM	DESCRIPTION		UNIT	PACK	HVAC No.
	Roth MultiPex® pipes Polyethylene pipe with oxygen stop and cross-linked with an electron beam. For heating, cooling, and domestic water systems. Max. operating temperature: 95°C Max. operating pressure: 10 bar (145 PSI)				
	Roth MultiPex® pipe 15 x 2.5 mm	5 m	lgth	1/22	087311.215
	Roth MultiPex® pipe 18 x 2.5 mm	5 m	lgth	1/20	087311.218
	Roth MultiPex® pipe 22 x 3.0 mm	5 m	lgth	1/13	087311.222
	Roth MultiPex® pipe 28 x 4.0 mm	5 m	lgth	1/8	087311.228
	Roth MultiPex® pipe 32 x 4.4 mm	5 m	lgth	1/6	087311.232
	Roth MultiPex® pipe 12 x 2.0 mm	60 m	roll	1/6	087365.228
	Roth MultiPex® pipe 12 x 2.0 mm	120 m	roll	1/6	087365.229
	Roth MultiPex® pipe 15 x 2.5 mm	60 m	roll	1/6	087365.233
	Roth MultiPex® pipe 15 x 2.5 mm	120 m	roll	1/6	087365.234
	Roth MultiPex® pipe 18 x 2.5 mm	120 m	roll	1/6	087365.241
	Roth MultiPex® pipe 22 x 3.0 mm	120 m	roll	1/6	087365.252
	Roth MultiPex® pipe 28 x 4.0 mm	60 m	roll	1/6	087365.255
	Roth MultiPex® pipe 32 x 4.4 mm	60 m	roll	1/4	087365.259
	Roth MultiPex® pipe in pipe				
	Roth MultiPex® pipe in pipe 12 x 2.0 mm Casing pipe: Dpth/Diam. in mm = 25/20	60 m	roll	1/6	087367.228
	Roth MultiPex® pipe in pipe 15 x 2.5 mm Casing pipe: Dpth/Diam. in mm = 25/20	60 m	roll	1/6	087367.233
	Roth MultiPex® pipe in pipe 15 x 2.5 mm Casing pipe: Dpth/Diam. in mm = 25/20	180 m	roll	1/6	087367.235
	Roth MultiPex® pipe in pipe 18 x 2.5 mm Casing pipe: Dpth/Diam. in mm = 28/23	60 m	roll	1/6	087367.241
	Roth MultiPex® pipe in pipe 22 x 3.0 mm Casing pipe: Dpth/Diam. in mm = 34/29	60 m	roll	1/6	087367.251
	Roth MultiPex® pipe in pipe 28 x 4.0 mm Casing pipe: Dpth/Diam. in mm = 42/36	60 m	roll	1/4	087367.258
	Roth MultiPex® pipe in pipe 32 x 4.4 mm Casing pipe: Dpth/Diam. in mm = 42/36	60 m	roll	1/4	087367.262
	Roth MultiPex® pipe in pipe 12 x 2.0 mm "Mini" Casing pipe: Dpth/Diam. in mm = 20/16	60 m	roll	1/6	087367.128
	Roth MultiPex® pipe-in-pipe, with insulation				
	Roth MultiPex® pipe PLUS 12 x 2.0 mm Insulation: Dpth/Diam. in mm = 35/17	60 m	roll	1/4	087366.228
	Roth MultiPex® pipe PLUS 15 x 2.5 mm Insulation: Dpth/Diam. in mm = 38/20	60 m	roll	1/4	087366.233
	Roth MultiPex® pipe PLUS 18 x 2.5 mm Insulation: Dpth/Diam. in mm = 45/27	60 m	roll	1/4	087366.241
	Roth MultiPex® pipe PLUS 22 x 3.0 mm Insulation: Dpth/Diam. in mm = 50/32	60 m	roll	1/4	087366.251
	Roth MultiPex® pipe PLUS 28 x 4.0 mm Insulation: Dpth/Diam. in mm = 52/32	60 m	roll	1/4	087366.258
	Roth MultiPex® pipe PLUS 32 x 4,4 mm Insulation: Dpth/Diam. in mm = 64/38	60 m	roll	1/4	087366.262
	Roth MultiPex® pipe X-PLUS 28 x 4.0 mm, 20 mm Insulation: Dpth/Diam. in mm = 72/32	60 m	roll	1/4	087204.228
	Roth MultiPex® pipe X-PLUS 32 x 4.4 mm, 20 mm Insulation: Dpth/Diam. in mm = 78/38	60 m	roll	1/4	087204.232

Roth MultiPex® Pipes

ITEM	DESCRIPTION		UNIT	PACK	HVAC No.
	Roth MultiPex® pipe-in-pipe, with insulation				
	Roth MultiPex® pipe-in-pipe PLUS 12 x 2.0 mm 60 m Insulation: Dpth/Diam. in mm = 45/27		roll	1/4	087368.228
	Roth MultiPex® pipe-in-pipe PLUS 15 x 2.5 mm 60 m Insulation: Dpth/Diam. in mm = 45/27		roll	1/4	087368.233
	Roth MultiPex® pipe-in-pipe PLUS 18 x 2.5 mm 60 m Insulation: Dpth/Diam. in mm = 50/32		roll	1/4	087368.241
	Roth MultiPex® pipe-in-pipe PLUS 22 x 3.0 mm 60 m Insulation: Dpth/Diam. in mm = 55/37		roll	1/4	087368.251
	Roth MultiPex® pipe-in-pipe PLUS 28 x 4.0 mm 60 m Insulation: Dpth/Diam. in mm = 74/48		roll	1/4	087368.258
	Roth MultiPex® pipe-in-pipe PLUS 32 x 4.4 mm 60 m Insulation: Dpth/Diam. in mm = 74/48		roll	1/4	087368.262
	Roth MultiPex® pipe-in-pipe, with insulation X-PLUS				
	Roth MultiPex® pipe-in-pipe X-PLUS 15 x 2.5 mm 60 m Insulation: Dpth/Diam. in mm = 68/28		roll	1/4	087205.215
	Roth MultiPex® pipe-in-pipe X-PLUS 18 x 2.5 mm 60 m Insulation: Dpth/Diam. in mm = 72/32		roll	1/4	087205.218
	Roth MultiPex® pipe-in-pipe X-PLUS 22 x 3.0 mm 60 m Insulation: Dpth/Diam. in mm = 78/38		roll	1/4	087205.222
	Roth MultiPex® pipe-in-pipe X-PLUS 28 x 4.0 mm 60 m Insulation: Dpth/Diam. in mm = 88/48		roll	1/4	087205.228
	Roth MultiPex® pipe-in-pipe X-PLUS 32 x 4.4 mm 60 m Insulation: Dpth/Diam. in mm = 88/48		roll	1/4	087205.232
	Roth Casing pipe **Casing pipe for MultiPex® pipe in HD polyethylene** **Color: white**				
	Roth Casing pipe, Dpth/Diam 25/20 mm	60 m	roll	1/6	087261.225
	Roth Casing pipe, Dpth/Diam 28/23 mm	60 m	roll	1/6	087261.228
	Roth Casing pipe, Dpth/Diam 34/29 mm	60 m	roll	1/6	087261.534
	Roth Casing pipe, Dpth/Diam 42/36 mm	60 m	roll	1/6	087261.542
	Roth Casing pipe, Dpth/Diam 54/44 mm	50 m	roll	1/4	087261.254

Roth Manifolds & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Pipe Manifold Type TT Complete Manifold pipe TT 22 mm with TT outlets that are 12, 15, and 18 mm. All including support bushing			
	Roth Manifold Pipe TT 1 x 12 mm	ea.	1/20	046221.212
	Roth Manifold Pipe TT 1 x 15 mm	ea.	1/20	046221.215
	Roth Manifold Pipe TT 1 x 18 mm	ea.	1/20	046221.218
	Roth Manifold Pipe TT 2 x 12 mm	ea.	1/20	046222.212
	Roth Manifold Pipe TT 2 x 15 mm	ea.	1/20	046222.215
	Roth Manifold Pipe TT 2 x 18 mm	ea.	1/20	046222.218
	Roth Manifold Pipe TT 3 x 12 mm	ea.	1/20	046223.212
	Roth Manifold Pipe TT 3 x 15 mm	ea.	1/20	046223.215
	Roth Manifold Pipe TT 2 x 2 x 15 mm,	ea.	1/20	046224.215
	Roth TT Ball Valve The Roth TT Ball Valve is used in conjunction with the Roth TT Manifold Pipe. An elbow is achieved by using Roth Elbow 22 mm TT, HVAC no. 047120.022			
	Roth TT Ball Valve 15 mm M/N	ea.	1/10	046220.215
	Roth TT Ball Valve 18 mm M/N	ea.	1/10	046220.218
	Roth TT Ball Valve 22 mm M/N	ea.	1/10	046220.222
	**Roth End Socket for Manifold pipe TT** For end of Manifold TT 22 mm.	ea.	1/10	047187.022
	Roth Plug for TT Manifold pipe			
	For plugging Manifold, TT 15 mm.	ea.	1/10	046219.220
	For plugging Manifold, TT 22 mm.	ea.	1/10	046219.222
	Roth Manifold EURO 3/4"			
	Roth Manifold EURO 2 outlets	ea.	1/25	046215.230
	Roth Manifold EURO 3 outlets	ea.	1/25	046216.230
	Roth Manifold EURO 4 outlets	ea.	1/25	046217.230
	Roth Manifold Coupling EURO 3/4"			
	Roth Manifold Coupling 12 mm x 3/4" EURO	ea.	1/50	401974.812
	Roth Manifold Coupling 15 mm x 3/4" EURO	ea.	1/50	401974.815
	Roth Manifold Coupling 18 mm x 3/4" EURO	ea.	1/50	401974.818

Roth Pipe Manifolds & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth End Socket 3/4" Roth End Socket 3/4" incl. gasket	ea.	1/10	048300.106
	Roth End Socket 3/4" Roth End Socket 3/4"	ea.	1/10	046615.006
	Roth Mounting Kit 3/4" Roth Mounting Kit 3/4", for walls and cabinets For TT and EURO.	kit	1/10	046269.206

Coupling Canisters & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth QuickBox™ Used in pipe-in-pipe systems, providing a water damage proof and replaceable system. The QuickBox is available ready-assembled, including pressure test plug and TT coupling for 12/20, 15/25, and 18/28 mm MultiPex pipes. QuickBox for wallboard includes wallboard mounting kit. See below.			
	Roth QuickBox for wall 12 mm TT	ea.	1/20	087274.212
	Roth QuickBox for wall 15 mm TT	ea.	1/20	087274.215
	Roth QuickBox for wall 18 mm TT	ea.	1/20	087274.218
	Roth QuickBox for drywall 12 mm TT	ea.	1/20	087277.212
	Roth QuickBox for drywall 15 mm TT	ea.	1/20	087277.215
	Roth QuickBox for drywall 18 mm TT	ea.	1/20	087277.218
	Roth QuickBox for wall 15 mm TT, double	ea.	1/20	087274.315
	Roth QuickBox for drywall 15 mm TT, double	ea.	1/20	087277.315
	Roth Mounting Kit for drywall Used for QuickBox for drywall canister if it is to be changed from wall canister to wallboard canister. Consists of flange and half-fitting.	ea.	1	087277.470
	Roth QuickBox Fitting, c/c 150 Used for embedding double QuickBox. Screws and plugs provided.	ea.	1/40	087288.250
	Roth QuickBox Mounting Rail for cross beams Used for mounting between cross beams. The mounting rail is intended for 600 c/c cross beams and can be shortened as needed.. Fittings for right and left sides and screws provided.	ea.	1/10	087277.465
	Roth QuickBox Flange or Vinyl/PVC mm Used in connection with installed wallboards.	ea.	10/80	087274.490

Coupling Canisters & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Coatning Collar Used for walls			
	Roth Coatning Collar for Roth QuickBox	ea.	1/10	087289.290
	Roth Coatning Collar for Roth Multi-Pipe Sleeve	ea.	1/10	087289.286
	Roth Coatning Collar for Roth Coupling Canisters 087281.xxx	ea.	1/10	087289.285
	Roth QuickBox Extender	ea.	1	087274.495
	Roth Coupling Canister for wall Approved pursuant to NT Build 448.			
	Roth Canister for wall ½" x 15 mm, PX	ea.	1/10	087281.245
	Roth Coupling Canister for wall, double Center distance 153 mm.			
	Roth Coupling Canister for wall ½" x 15 mm, PX	ea.	1/20	087281.285
	Roth Coupling Canister for drywall Approved pursuant to NT Build 448.			
	Roth Coupling Canister for drywall ½" x 15 mm, PX	ea.	1/10	087282.245

Coupling Canisters & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Coupling Canister for drywall, double Center distance 153 mm. **Roth Coupling Canister for drywall ½" x 15 mm, PX**	ea.	1/20	087282.285
	Roth Front Flange Used for bolting Roth Coupling Canisters onto drywall. **Roth Front Flange for drywall**	ea.	1/10	087276.298
	Roth Fitting **Roth Fitting, single** **Roth Fitting, double**	ea. ea.	1/10 1/10	087288.210 087288.220
	Roth Coupling Canisters for Special Tasks **Roth Coupling Canister 40 degr. ½" x 15 mm, PX** **Roth Dual-pipe Coupling Canister ½" x 15 mm, PX** (The canister does not meet the water standard requirements for exchangeable assemblies; see separate brochure).	ea. ea.	1/10 1/10	087284.215 087286.245
	Roth Multi Sleeve Used for placing 15 mm pipe-in-pipe through wall or floor.	ea.	1/10	087255.255

Coupling Canisters & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth End Gasket For Multi pipe sleeves. Used as gasket between pipe and Casing pipe.	ea.	1/10	087255.265
	Roth Wall Attachment 15 mm x ¾" with chrome Used in connection with installation of Multi Pipe Sleeve when attaching equipment such as a shower battery.	ea.	1/40	728275.045
	Roth Wall Attachment 15 mm x 15 mm with rosette Used for placing 15 mm pipe-in-pipe through wall or floor in connection with installation of Multi Sleeve.	ea.	1/40	728275.115
	Roth Wall Attachment 15 mm x 15 mm without rosette Used for placing 15 mm pipe-in-pipe through wall or floor in connection with installation of Multi Sleeve.	ea.	1/40	728275.145
	Roth Intake Piece, chrome			
	Roth Intake Piece, straight ½" x ½" N/N, with rosette	ea.	1/40	728211.004
	Roth Intake Piece, straight ½" x ½" N/M, with rosette	ea.	1/40	728213.004
	Roth Intake Piece, Straight ¾" x ½" N/N, with rosette	ea.	1/40	728211.033
	Roth Intake Piece, straight ¾" x ½" N/N, with rosette and shut-off.	ea.	1/40	728257.033
	Roth Connecting Piece, elbow ½" x 10 mm, with rosette	ea.	1/40	728427.023
	Roth Connecting Piece, elbow ½" x 10 mm, with rosette and shut-off	ea.	1/40	728428.023
	Roth Connecting Piece, elbow ½" x 12 mm, with rosette and shut-off	ea.	1/40	728428.033

Coupling Canisters & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth ball valve, 15 mm x 10 mm compression nut/ring	ea.	1	743780.115
	Roth rosette with chrome **Roth rosette 75 mm x ½" with chrome Low version** **Roth rosette 75 mm x ¾" with chrome High version**	 ea. ea.	 1 1	 728970.000 728970.100
	Roth Stainless Steele protecting tube and rosette Used for pipe-in-pipe system. The protecting tube hides and protects the PEX pipe. The rosette ensures sealing between the rosette and the Casing pipe. manufactured in polished, stainless steel. **Roth Rosette for 25 mm Casing pipe** **Roth Rosette for 25 mm Casing pipe with 150 mm protecting tube** **Roth Rosette for 25 mm Casing pipe with 800 mm protecting tube**	 ea. ea. ea.	 1/10 1/10 1/10	 087269.225 087269.245 087269.248

Roth Cabinets & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Manifold Cabinets, Waterproof, Plastic **Roth Manifold Cabinets 400x550x96 mm int.** **Roth Manifold Cabinets 550x550x96 mm int.** **Roth Manifold Cabinets 800x550x96 mm int.** The Cabinets comes complete with pipe sleeve, bracket for manifold and drain. Pipe sleeve are pre-essembled.	 ea. ea. ea.	 1 1 1	 046297.504 046297.506 046297.508
	Roth frame and door for Manifold Cabinets, Plastic. Frame and door in steel **Roth Frame and door for 400 mm Cabinets** **Roth Frame and door for 550 mm Cabinets** **Roth Frame and door for 800 mm Cabinets**	 ea. ea. ea.	 1 1 1	 046297.514 046297.516 046297.518
	Roth Pipe Sleeve for Manifold Cabinets, Plastic **Roth Pipe Sleeve, 16-25 mm** **Roth Pipe Sleeve, 25-34 mm** **Roth Pipe Sleeve, 42 mm**	 ea. ea. ea.	 10 10 4	 046297.525 046297.534 046297.542
	Roth Manifold Cabinets, typ Mini. Waterproof, Plastic **Typ Mini 222x272x70 mm**	 ea.	 1	 046297.520
	Manifold for typ Mini. **Manifold 3/8" x ½"** without fittings	ea.	1	046297.603
	Manifold 3/8" x ½" with fittings and shut-off	ea.	1	046297.613
	Manifold 3/8" x ½" with fittings	ea.	1	046297.623

Roth Cabinets & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Manifold Cabinet in plastic Manufactured in polyester with a white gate in ABS. Incl. rack for EURO/ TT and Giacomini Manifolds.			
	Roth Manifold Cabinet, 520x300x90 mm, for EURO and TT	ea.	1	046297.106
	Roth Manifold Cabinet, 520x300x90 mm, for Giacomini	ea.	1	046297.105
	Roth End Sleeves			
	Roth End Sleeves, red	ea.	1/10	087254.275
	Roth End Sleeves, blue	ea.	1/10	087254.278
	Roth overflow for waterproof cabinets For mounting on the wall below the cabinet. To be connected to the cabinet drain with a 25 mm Casing pipe.	ea.	1	046297.840

Mounting Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Building Kit	kit	1	404744.925
	Roth Pipe Bend			
	Roth Pipe Bend, plastic 25 mm	ea.	1/50	087249.225
	Roth Pipe Bend, plastic 28 mm	ea.	1/50	087249.228
	Roth Pipe Bend, plastic 28 mm with fitting	ea.	1/50	087249.258
	Roth Pipe Bend, plastic flex 25 mm	ea.	1/50	087249.325
	Roth Pipe Bend, steel 12 mm	ea.	1/50	087251.212
	Roth Pipe Bend, steel 15 mm	ea.	1/60	087251.215
	Roth Pipe Bend, steel 18 mm	ea.	1/40	087251.218
	Roth Pipe Bend, steel 25 mm	ea.	1/20	087251.225
	Roth Pipe Bend, steel 34 mm	ea.	1/20	087251.234
	Roth Pipe Bend, steel 42 mm	ea.	1/20	087251.242
	Roth Pipe Bend Support			
	Roth Pipe Bend Support, PVC 25/29 mm	ea.	1/20	087255.275
	Roth Pipe Bend Support, PVC 33/37 mm	ea.	1/20	087255.284
	Roth Straight-through joint Used for joining Casing pipes.			
	Roth Straight-through Joint 25 mm	ea.	1/10	087262.225
	Roth Straight-through Joint 28 mm	ea.	1/10	087262.228
	Roth Straight-through Joint 34 mm	ea.	1/10	087262.234
	Roth Nail Shield for pipe-in-pipe 20, 25, 28, and 34 mm Used where the pipe intersects with wood beams, etc. Comes with a single fixation bracket.	ea.	1/10	087289.239
	Roth Attachment Bracket Used for placing 15 mm pipe-in-pipe in beams and joisting.	ea.	1/50/400	087289.234

Mounting Accessories and Ion Traps

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Brackets System brackets that are hooked together independent from the dimension, and which are used for securing pipes-in-pipe in accordance with the installation manual.			
	Roth Brackets 20 mm	ea.	1/50/500	087250.220
	Roth Brackets 25 mm	ea.	1/50/400	087250.225
	Roth Brackets 28 mm	ea.	1/50/400	087250.228
	Roth Brackets 34 mm	ea.	1/50/300	087250.234
	Roth Pipe Hook Used for securing pipe-in-pipe in concrete decks.			
	Roth Pipe Hook 80 mm, single, for 14 - 34 mm pipes	ea.	1/50	087253.288
	Roth Pipe Hook 100 mm, single, for 14 - 34 mm pipes	ea.	1/50	087253.290
	Roth Pipe Hook 60 mm, double, for 14 - 34 mm pipes	ea.	1/25	087253.292
	Roth Protective Cap for PEX Pipes Used for keeping the PEX pipes clean during installation.			
	Roth Protective Cap 12 mm	ea.	1/100	087243.212
	Roth Protective Cap 15 mm	ea.	1/100	087243.215
	Roth Protective Cap 18 mm	ea.	1/100	087243.218
	Roth Protective Cap 22 mm	ea.	1/100	087243.222
	Roth Protective Cap 28 mm	ea.	1/100	087243.228
	Roth Ion Trap with support bushing Used for separating CU pipes from steel pipes.			
	Roth Ion Trap 12 mm	ea.	1	087257.212
	Roth Ion Trap 15 mm	ea.	1	087257.215
	Roth Ion Trap 18 mm	ea.	1	087257.218
	Roth Ion Trap 22 mm	ea.	1	087257.222

Fittings, push

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Union, TT			
	Roth Union 12 mm TT	ea.	1/5/50	047170.012
	Roth Union 15 mm TT	ea.	1/5/50	047170.015
	Roth Union 18 mm TT	ea.	1/5/50	047170.018
	Roth Transition Socket, TT			
	Roth Transition Socket 12 x ½", TT	ea.	1/5/50	047165.132
	Roth Transition Socket 15 x ½", TT	ea.	1/5/50	047165.015
	Roth Transition Socket 18 x ¾", TT	ea.	1/5/50	047165.232
	Roth Transition Socket 22 x ¾", TT	ea.	1/5/50	047165.022
	Roth Transition Socket 22 x 1", TT	ea.	1/5/50	047165.291
	Roth Transition Socket 28 x 1", TT	ea.	1/5/50	047165.028
	Roth Transition Nipple, TT			
	Roth Transition Nipple 12 x 3/8", TT	ea.	1/5/50	047160.012
	Roth Transition Nipple 12 x ½", TT	ea.	1/5/50	047160.132
	Roth Transition Nipple 15 x 3/8", TT	ea.	1/5/50	047160.166
	Roth Transition Nipple 15 x ½", TT	ea.	1/5/50	047160.015
	Roth Transition Nipple 18 x ¾", TT	ea.	1/5/50	047160.232
	Roth Transition Nipple 22 x ¾", TT	ea.	1/5/50	047160.022
	Roth Transition Nipple 22 x 1", TT	ea.	1/5/50	047160.291
	Roth Transition Nipple 28 x 1", TT	ea.	1/5/50	047160.028
	Roth Elbow, TT			
	Roth Elbow 12 mm, TT	ea.	1/5/50	047120.012
	Roth Elbow 15 mm, TT	ea.	1/5/50	047120.015
	Roth Elbow 18 mm, TT	ea.	1/5/50	047120.018
	Roth Elbow 22 mm, TT	ea.	1/5/50	047120.022
	Roth Street elbow, TT			
	Roth Street elbow 15 mm, TT	ea.	1/5/50	047140.015
	Roth Street elbow 18 mm, TT	ea.	1/5/50	047140.018
	Roth Street elbow 22 mm, TT	ea.	1/5/50	047140.022
	Roth Elbow with connector, TT			
	Roth Elbow 15 x ½" connector, TT	ea.	1/5/50	047124.015
	Roth Elbow 18 x ¾" connector, TT	ea.	1/5/50	047124.232
	Roth Elbow 22 x ¾" connector, TT	ea.	1/5/50	047124.022
	Roth Elbow with nipple, TT			
	Roth Elbow 15 x ½" nipple, TT	ea.	1/5/50	047122.015
	Roth Elbow 18 x ¾" nipple, TT	ea.	1/5/50	047122.232
	Roth Elbow 22 x ¾" nipple, TT	ea.	1/5/50	047122.022
	Roth Elbow 28 x 1" nipple, TT	ea.	1/5/50	047122.028

Fittings, push

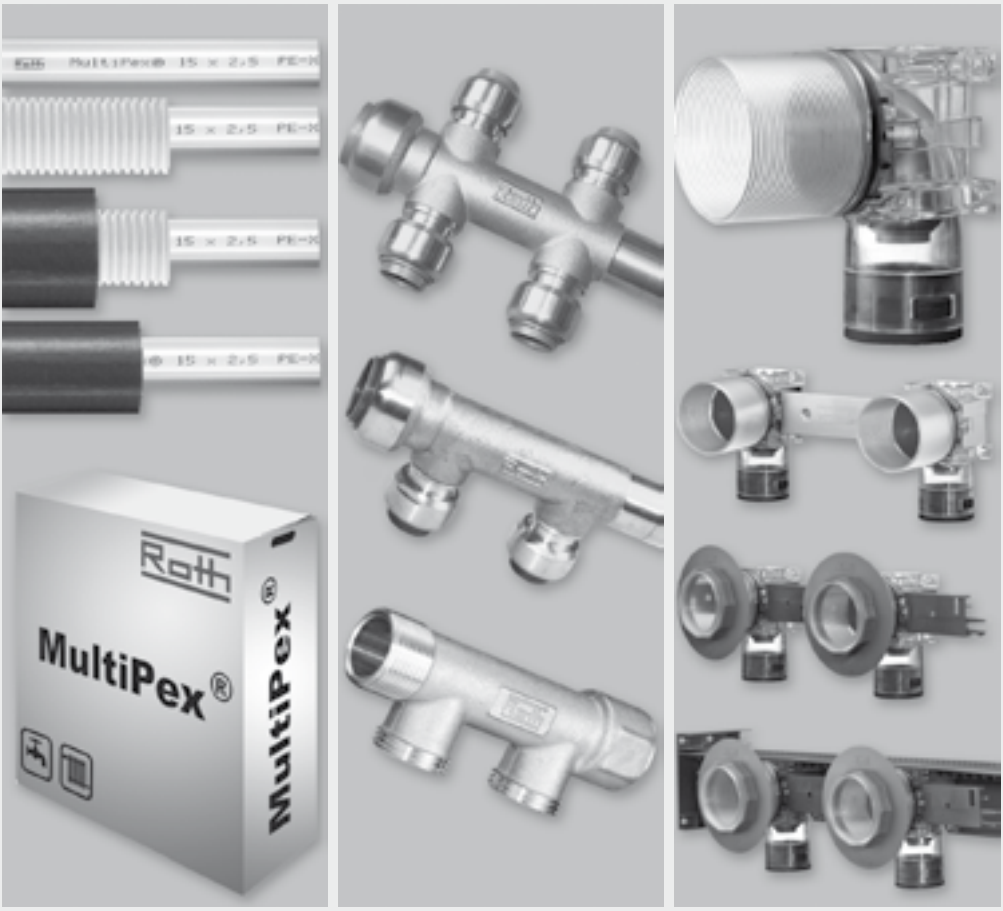
ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth T-pipe			
	Roth T-pipe 22 mm, TT	ea.	1/5/50	047130.022
	Roth T-pipe 28 x 22 x 28 mm, TT	ea.	1/5/50	047130.339
	Roth Reducer			
	Roth Reducer 15 x 12 mm, TT	ea.	1/5/50	047151.166
	Roth Reducer 22 x 15 mm, TT	ea.	1/5/50	047151.263
	Roth Reducer 22 x 18 mm, TT	ea.	1/5/50	047151.272
	Roth Reducer 28 x 22 mm, TT	ea.	1/5/50	047151.339
	Roth Sealing Cap, TT			
	Roth Sealing Cap 12 mm, TT	ea.	5/50	047187.012
	Roth Sealing Cap 15 mm, TT	ea.	5/50	047187.015
	Roth Sealing Cap 18 mm, TT	ea.	5/50	047187.018
	Roth Sealing Cap 22 mm, TT	ea.	5/50	047187.022
	Roth Support Bushing			
	Roth Support Bushing 12 x 2,0 mm	ea.	5/50	047194.012
	Roth Support Bushing 15 x 2,5 mm	ea.	5/50	047194.015
	Roth Support Bushing 18 x 2,5 mm	ea.	5/50	047194.018
	Roth Support Bushing 22 x 3,0 mm	ea.	5/50	047194.022
	Roth Support Bushing 28 x 4,0 mm	ea.	5/50	047194.028

Tools for Coupling Canisters & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth TT Dismantling Tool Roth TT Dismantling Tool 12 mm Roth TT Dismantling Tool 15 mm Roth TT Dismantling Tool 18 mm Roth TT Dismantling Tool 22 mm Roth TT Dismantling Tool 28 mm	 ea. ea. ea. ea. ea.	 1 1 1 1 1	 047198.012 047198.015 047198.018 047198.022 047198.028
	Roth Assembly Tool Used for installing connector in coupling canister 087281.2xx og 087282.2xx.	ea.	1	087289.204
	Roth Assembly Tool Used for mounting front flange against drywall 087282.2xx.	ea.	1	087289.214
	Roth Miller for drywall coupling canister Used in connection with installing QuickBox.	ea.	1	087289.210
	Roth Replacement Joint Used for replacing 15 mm PEX pipe.	ea.	1	087289.220
	Roth Pipe Cutter Used for shortening PEX pipes.	ea.	1	087393.220
	Roth MultiPex® Pliers Used for 12, 15, and 18 mm PEX pipes.	ea.	1	087289.200
	Mounting-tool for QuickBox™, concrete/stone-wall, distance: 150 mm Comes with 2 pcs. QuickBox flange Used for mounting of QuickBox in concrete/stone walls.	ea.	1	087289.225

Roth MultiPex® Pipe System

Planning and Project Design



... living full of energy!

Roth MultiPex® Pipe System

... a modern installation technique for water and heating systems

The Roth MultiPex® pipe system is intended for the installation of both water and heating systems. The system is based on a Pex C-pipe in the well-known 12 x 2.0 mm,15 x 2.5 mm, 18 x 2.5 mm, 22 x 3.0 mm, 28 x 4.0 mm, and 32 x 4.4 mm standard dimensions.

A new fitting program has been developed for the system with coupling canisters and Manifold pipes with insertion couplings that are easily assembled without the use of expensive tools, and that feature the option of separating the coupling.

Of course, it is also possible to use all other approved PEX couplings for Roth MultiPex® pipes. The Roth MultiPex® system contains a variety of components that simplify and improve the pipe system (see separate product range).

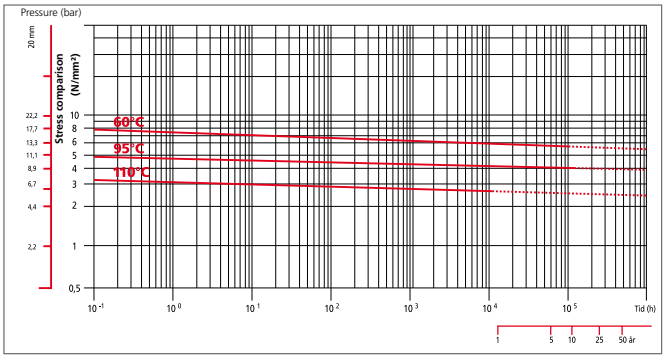
The MultiPex® pipe is a quality product that has been developed for water and heating systems. The production is ISO 9001 compliant, and it is monitored by a variety of independent testing institutions. One interesting point is the so-called time constant curve, which shows how the pipe behaves during its useful life.

The MultiPex® pipe only shows minimal drop in value, including during long-term testing at high temperatures. The curve does not show any abrupt deviations or and rapidly falling values. Even after 50 years, a MultiPex® pipe has a safety factor that far exceeds the minimum requirement for a PEX pipe.
Ongoing testing is perforwith pursuant to DIN 16892.

Physical characteristics for MultiPex® pipes.

Characteristic	Measured value	Norm
Cross-linking method	Electron beam	DIN 16892
Cross-linking degree	65- 70 %	DIN 16892
Density	0.946 g/cm³	DIN 53479
Ultimate stress	24 N/mm²	DIN 53455
Elongation after fracture	65- 600 %	DIN 53455
E-module, at 2% expansion	300 N/mm²	DIN 53457
Impact resistant at -20°C	Zero fractures	DIN 53453
Impact strength when notched at -20°C	Zero fractures	DIN 53453
Stress corrosion	Zero cracks	ASTM DIN 1693
Thermal conductivity	0.33 W/K m	DIN 52612
Coefficient of linear expansion	1.4 x 10-4 K-1	DIN 52328
Diffusion at 40°C	<0.1 mg /l d	DIN 4726
Minimum bending radius at 20°C	5 x diameter	DIN 4726
Relaxation	1.3 cm/m	
Insulation value on MultiPex insulation	0,040 W/m K (Δt 40°)	

The time constant for Roth MultiPex® pipes (internal pressure experiment)

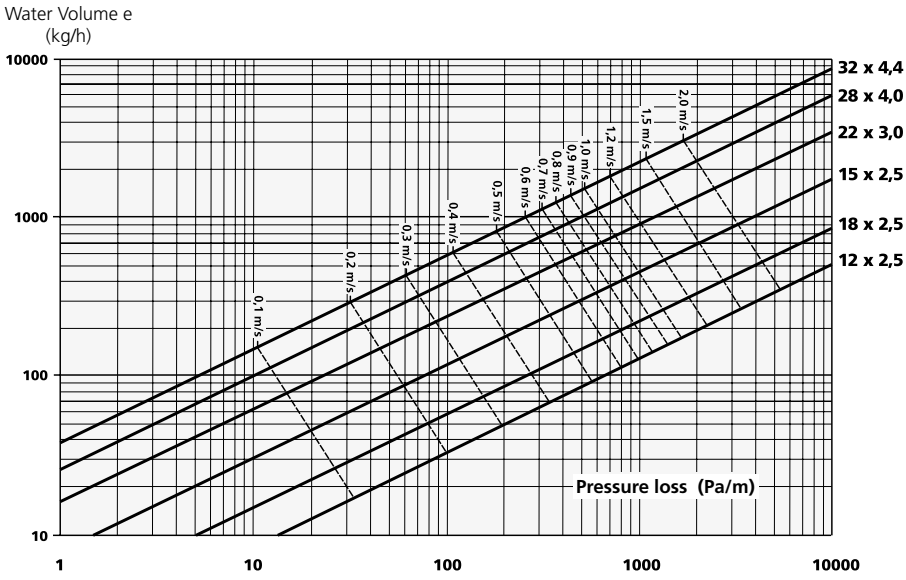


The Roth MultiPex® pipe has several advantages:

- Long durability
- Great aging resistance (slow corrosive effect on pipe)
- Great heat stability Allowed operating temperature up to 95 degrees C. (100 degrees C for short periods of time) with an operating pressure of 6 bar (87 PSI).
- Low loss of pressure, no deposits, and no galvanic or chemical corrosion
- Ability to withstand "construction site treatment"
- Ability to withstand embedding in concrete
- Great impact resistance, including during cold conditions
- Great flexibility that makes it easy to work with, including during cold conditions
- DIN 4726-compliant diffusion tightness
- VA (Water and Drainage) approved 1.14/18077 for 95 degrees at 10 bar (145 PSI).
- System approved pursuant to NT VVS 129

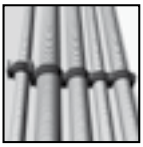
Roth MultiPex® Pipe System

Pressure loss diagram for Roth MultiPex® pipes



The Roth MultiPex® is a durable pipe in itself when observing the operating area of 10 bar/95o C (145 PSI/95o C). In addition, there are some rules and issues to be aware of and adhere to when working with PEX pipes.

Always cut the pipe with a PEX pipe cutter. This cut must be at a straight angle; any uneven cuts may cause the coupling to leak. Be aware that the pipe surface must be smooth and undamaged.



The pipe must be fastened to the building using an appropriately sized Roth Pipe Bracket. The use of different types of braces may result in the Casing pipe becoming crushed and damaged, rendering impossible a subsequent replacement of the PEX pipe. This also applies when running pipes under partitions, etc.

Only use fittings approved for use with PEX pipes. Always follow the manufacturer's installation guide for the individual coupling. Make sure to place the coupling on straight pipe sections; never where the pipes bend. Avoid embedding assemblies in walls and floors.

After installing the PEX pipes, it is important to protect the exposed pipes against the ultraviolet rays of the sun. In the case of the radiators, this is done by using a Roth rosette with a protecting tube. This can also be used for the Manifold if it is not located within the protection of a dark cabinet.

It is highly essential to build the connection to Manifold pipes or elsewhere in such a way that the pipe goes straight into the coupling The easiest way to do this is to install the Manifold at a min. height of 300 mm above the floor. This facilitates the installation itself and thus also the possibility of a straight pipe section.

Avoid putting the PEX pipe in contact with products that contain solvents. These include varnish, paint, permanent markers, tape, cleaning detergents, etc. The resulting damages will not show up until much later and will not be covered by the warranty. Furthermore, the MultiPex system components must not be exposed to gas leaks.

Planning

one pipe for both water and heating...

General information for both systems.

When planning an installation according to the Manifold pipe principle, it is important to place the Manifold in a central location in relation to tap locations/ radiators and as close to the individual outlet as possible.

It is beneficial to place the Manifolds at the bottom of cabinet set-ups or, if this is not feasible, inside Roth Manifold Cabinets, for embedding or free-standing installation.

The MultiPex® meets the requirements set forth in "DS 439 for water systems," as well as "DS 469 for water-based heating systems".

Planning MultiPex® heating systems.

From the water heater and the plug, two MultiPex® pipes-in-pipe serving as feeder pipes are installed up to the Manifold pipes for cold and hot water, respectively.

If the assembly needs circulation, this is achieved by running a pipe from the Manifold and back to the water heater. Please refer to section titled Circulation.

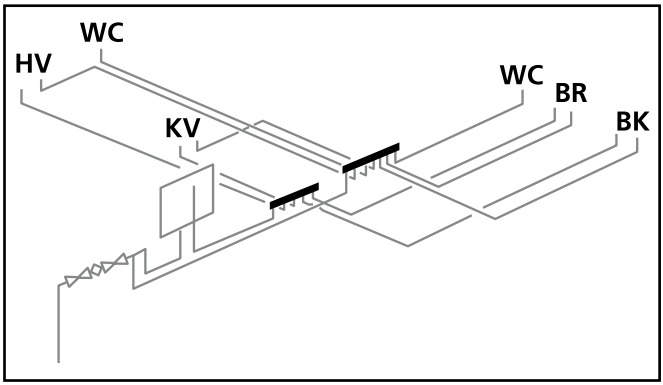
When the pipes are rolled out, they need to be placed using the smoothest bends possible and with a maximum of three sharp 90o elbows on a single stretch. In constructions where the pipes are not sealed, such as below a wooden floor, it is important to place the Casing pipes in a fixed position at each change of direction; otherwise, the Casing pipe will work as a spring in the event that the PEX pipe is replaced (see illustration).

If the installation involves running pipes from the Manifold pipe horizontally across the floor and then up to a coupling canister, a 25 mm pipe bend should be placed both by the Manifold as well as by the coupling canister.

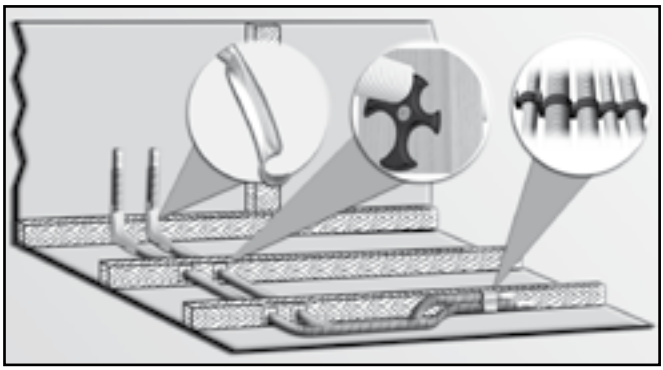
An appropriately sized Roth Pipe Bracket should be used when fastening pipes-in-pipe. The use of nails, perforated strip, etc. will cause the Casing pipe to be crushed flat, making it impossible to replace the interior pipe.

The system is completed by the faucet by using a Roth coupling canister, which is available in single as well as double versions for both wall and drywall.

MultiPex® pipe-in-pipe water system principle



Placing and fastening of Roth MultiPex® pipe-in-pipe in light structures



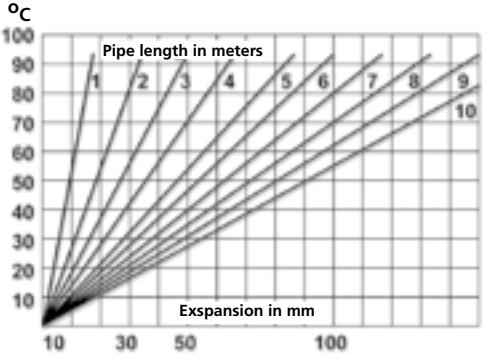
Further information is available in the NT VVS 129 instructions, which provide a thorough description of how to perform the installation.

Roth MultiPex® Pipe System

Expansion and shrinkage

Like all plastic pipes, the MultiPex® has a relatively high expansion coefficient. A certain counteracting factor is also that PEX pipes generally can shrink by up to 1.3% in length after the system is put into operation. In order to absorb this shrinkage as well as the normal length expansions, it is important to lay the pipes properly. This can be done by laying the pipes using two 90-degree bends between the radiator and the Manifold. In the even to a pipe-in-pipe system, this recommendation can generally be ignored since there is adequate space between the MultiPex pope and the Casing pipe.

The thermal expansion is illustrated in the chart below.



Type approval

The MultiPex® pipe is Water and Drainage approved. The approval is based on strict toxicological tests that reflect that the pipe material does not affect the odour and taste of the water, and that it does not emit any substances that are hazardous to the health.

Frost protection

The DS 439 standard for water systems describes how to protect systems against frost. The MultiPex® pipe has been tested at several laboratories and has a great resistance ability in terms of both internal and external mechanical, chemical, and microbiological attacks.

Water damage proof

The MultiPex pipe system is a complete pipe system that meets the requirements for a water damage proof system as long as it is built pursuant to NT VVS 129.

Damage prevention

The system must be built so that any leakage is easily and rapidly detected and damage is prevented.

Replacement ability

The pipes must be laid in such a way that leakages are prevented and so that they are easy to replace.

Roth MultiPex® Pipe System

Replaceable

The pipes must be mounted in a way that prevents leaks and facilitates replacement.

Fire requirements

Where MultiPex is used in structures covered by fire requirementsp, the regulations from Danish Institute of Fire and Security Technology (DBI) should be observed closely. In multi-storey buildings with dwellings, fire protection may usually be omitted for pipe dimensions up to 32 mm, but please refer to DBI guideline 31
Where MultiPex is used as feeding pipe for hose wheels, the pipes must be insulated to ensure that water supply for fire fighting may be upheld for at least 30 minutes. Please refer to DBI guideline 15.

Planning MultiPex® water installations.

Water systems must be designed and dimensioned according to the Danish Society of Engineers standard for water systems, DS 439.

Systems can be designed by performing either a full calculation or a simple calculation. A full calculation requires excellent design knowledge and should be left to an engineer.

The simplified calculation is somewhat easier and may be used for dwellings and office buildings, etc., under certain conditions, cf. item 2.4 of the standard. For the purpose of facilitating dimensioning, Roth has prepared some tables that make it easy and safe to dimension a system according to the simplified calculation method.

Table 1, Service Pipes

kPa	mWc	Qs	Max m. PEL pipe	
		l / s	32 mm	40 mm
50	5	0,51	15	42
100	10	0,51	74	215

The table shows how many meters of a given dimension of PEL/PEM pipe can be laid without the pressure loss on this section exceeding 50 kPa and 100 kPa, respectively.

Table 2, Coupling Pipes

Water flow qf (l/s)	Tap location	15 mm Max m.
0,1	Sink, toilet	32,0 (12,5)
0,2	Other	9,2
0,3	Bath tub	4,1

The table indicates the maximum length of a coupling pipe in meters in order for the pressure loss not to exceed 50 kPa. The figures in parentheses should apply to warm water systems to prevent the wait time from exceeding 10 sec.

Example of dimensioning:

To be able to dimension our feeder pipes, we need to know the available pressure loss in the system. The pressure loss at the rough bore location is usually disclosed by the water company; in our example, it is stated at 350 kPa, the service pipe is 15 m long, the height between the supply point (1.2 m down) and the most dangerous point (2.5 m up) is 3.7, the fitting in the pressure group is 150, there is a bath tub on the Manifold pipe, and the length of the feeder pipe is 10 m with an overall water flow of 0.6 l/s.
We can now calculate what is available for the rest of the system:

Supply point pressure	350 kPa
Height to most dangerous point (m x 10)	-37 kPa
Available pressure	313 kPa
Pressure loss in outlet (15 m, 32 mm PEM)	-50 kPa
Pressure loss in coupling pipe	-50 kPa
Pressure loss in fitting (x 0.5)	-75 kPa
Pressure loss for use in feeder pipe	138 kPa

Go to Table 3a under 100 kPa and find the pipe dimension where the length of the feeder pipe is greater than or equal to 10 m. In this case, an 18 mm MultiPex® pipe is selected.

Table 3, Feeder Pipes
(without bathtub)

Pt		Total Σ qf	Dimension			
kPa	mWs	(l / s)	15	18	22	28
50	5	0,2	4,3	18	50	148
		0,3	2,3	11	31	93
		0,4	1,8	9	27	81
		0,6	1,3	7	22	67
		0,8	1,0	6	19	57
100	10	0,2	9,9	37	102	297
		0,3	5,6	23	63	187
		0,4	4,7	20	55	164
		0,6	3,7	16	46	136
		0,8	3,0	13	39	115
150	15	0,2	15,0	56	153	447
		0,3	8,9	34	96	281
		0,4	7,6	30	84	247
		0,6	6,1	25	70	206
		0,8	5,0	21	59	174
200	20	0,2	20,3	75	204	
		0,3	12,2	47	128	
		0,4	10,5	41	112	
		0,6	8,6	33	93	
		0,8	7,0	28	78	

The table indicates which dimension to choose when Pt and pipe length are known. When calculating, Σ qf is converted to qd.

Table 3a, Feeder Pipes
(with bathtub)

Pt		Total Σ qf	Dimension			
kPa	mWs	(l / s)	15	18	22	28
50	5	0,3	1,5	8	24	72
		0,4	0,8	5	17	52
		0,6	0,4	4	14	42
		0,8	0,2	4	12	37
100	10	0,3	4,2	17	49	147
		0,4	2,7	12	35	106
		0,6	2,0	10	29	87
		0,8	1,6	9	25	77
150	15	0,3	6,9	27	75	221
		0,4	4,6	19	54	160
		0,6	3,6	15	44	132
		0,8	3,0	13	38	116
200	20	0,3	9,6	37	101	296
		0,4	6,5	26	72	214
		0,6	5,2	21	59	177
		0,8	4,4	18	52	156

The table indicates which dimension to choose when Pt and pipe length are known.

Roth MultiPex® Pipe System

Circulation of hot domestic water

When planning the water system, a decision needs to be made whether or not to establish circulation. As prescribed by the water standard, the maximum wait time should not exceed 10 sec., making it necessary to calculate the system wait time.

The wait time is calculated by first measuring the pipe that leads from the water heater to the Manifold pipe. The length is entered in the table, and the wait time can be read from the pipe dimension in question. After that, the pipe that runs from the Manifold pipe to the farthest tap location is measured, and again the wait time is read from the table. The two results are then added together to obtain the total wait time. If the wait time exceeds 10 sec., circulation should be created.

When creating circulation, a circulation pump needs to be installed. For this purpose a Vortex circulation pump is utilized. This pump has certain advantages such as low performance and a short built-in length.

Insulation for water systems

According to the DS 452 insulation standard, feeder pipes must be fully insulated. This applies to both cold and hot water.

Coupling pipes should only be insulated in the section located outside the room where the fitting is placed. When insulation is required, a MultiPex® pipe-in-pipe Plus or X-Plus equipped with foam insulation is selected.

Tightness test

Before putting into use a water system built with Roth MultiPex® pipe-in-pipe, the system should always be tested for leaks. The test should be perforwith with water, and the water pressure should be 1.5 times the estimated operating pressure for a duration of 2 hours.. After the pressure is turned on, the pressure may rise. This is perfectly normal. If the system is filled during the pressure test, a subsequent stable period must be achievable.

The pressure should be monitored throughout the tightness test. Be aware of the risk of subsequent freezing. Documentation for the tightness test must be made available.

Flushing the system

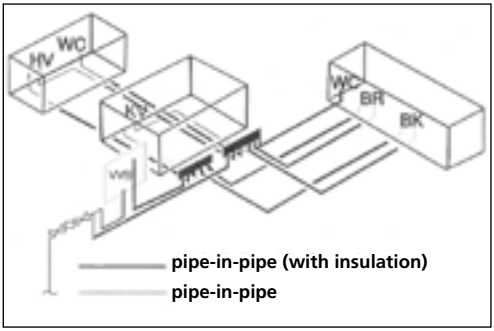
Roth MultiPex® systems contaminate less than other types of systems since no pipe and fitting assemblies are used.

GA full system rinse must take place in accordance to the requirements for water systems provided by DS 439.

Waiting time for MultiPex® pipe.

Amount l / s	Pipe dimension			
	28 x 4,0 s / m	22 x 3,0 s / m	18 x 2,5 s / m	15 x 2,5 s / m
0,1	3,14	2,01	1,32	0,79
0,2	1,57	1,00	0,66	0,40
0,3	1,04	0,67	0,44	0,27
0,4	0,78	0,50	0,33	0,20
0,5	0,63	0,40	0,26	
0,6	0,52	0,33		
0,7	0,45	0,29		
0,8	0,39	0,25		
0,9	0,35			
1,0	0,31			
1,1	0,28			
1,2	0,26			

Example of insulation of water system



Roth MultiPex® Pipe System

Definition of requirements for pipe insulation

	Class 0	Class 1	Class 2	Class 3	Class 4
Application	Rarely used pipe	Heating pipes in heated rooms	Heating pipe in not heated rooms	Pipes for hot tap water	Main pipe

Requirements for pipe insulation i mm.
Ambient tempeture is 20°C and watertemperature is 60°C.

Pipe dia. in mm	Class of insulation			
	Class 1	Class 2	Class 3	Class 4
12	20	20	20	30
15	20	20	20	30
18	20	20	20	30
22	20	20	30	30
28	20	20	30	40
32	20	30	30	40

Insulation as Rockwool, universal

Roth MultiPex® Pipe System

Planning MultiPex® heating systems.

From the boiler, two MultiPex® pipes-in-pipe serving as feed pipes are installed up to the Manifold pipes for in-flow and out-flow, respectively. The system can be built as either a dual-string system according to the Manifold pipe system or a conventional single-string system.

It is a good idea to place the Manifold pipe in a central location between the radiators so the sections are as short as possible. In the case of a very large system, or if zone divisions are desired, it is possible to set up Manifolds in different parts of the construction.

For example, MultiPex® pipes-in-pipe are installed form the Manifold and out to each individual radiator, allowing for a water damage proof system. However, this is not a requirement in the standard. When the pipes are rolled out, they need to be placed along the walls of the building with the smoothest bends possible and with a maximum of three sharp 90o elbows on a single stretch. In constructions where the pipes are not sealed, such as below a wooden floor, it is important to place the casing pipes in a fixed position at each change of direction; otherwise, the casing pipe will work as a spring in the event that the PEX pipe is replaced. In order to absorb movements of the pipe caused by heating and cooling, it is very important to lay the pipe properly (see drawing).
"Placing MultiPex® Pipes".

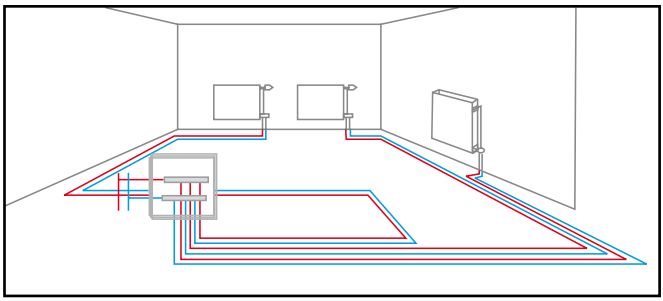
If the installation involves running pipes from the Manifold pipe horizontally across the floor and then up to a radiator or a coupling canister, a 25 mm pipe bend should be placed by both the Manifold as well as by the coupling canister. When fastening a pipe-in-pipe, an appropriately sized Roth pipe hook or pipe bracket must be used.

The use of nails, perforated strip, etc. will cause the casing pipe to be squeezed flat, making it impossible to replace the interior pipe.

An option is to complete the system by the radiator by using a Roth coupling canister, which is available in a single as well as a double version for both walls and drywalls.

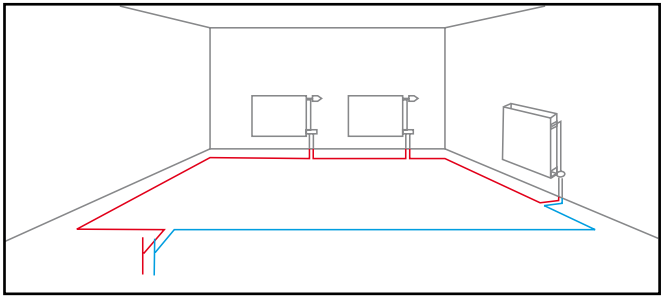
If the end of the MultiPex® pipe is visible above the floor, it needs to be protected against ultraviolet solar rays and mechanical overload . This is done by using a Roth Rosette with a protecting tube.

As a dual-string system



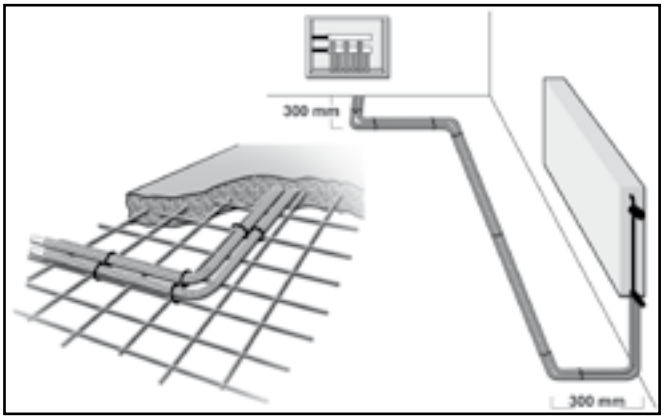
The MultiPex® is built as a dual-string system according to the Manifold pipe principle. The pipe is led from a centrally located Manifold pipe out to each individual radiator, and then back again.

As a single-string system



The MultiPex® system built as a single-string system where the pipe is led from radiator to radiator and is connected through single-string valve systems. The system can also be built as a dual-string system by using dual-string valves.

Placing MultiPex® Pipes.



Two 90° elbows are installed by the Manifold and the radiator, respectively. The elbows must meet the minimum bend radius of 5 x the outside pipe diameter There must be a minimum distance of 300 mm between the two elbows. On straight pipe sections, the pipes must be fastened every meter at a minimum.

Roth MultiPex® Pipe System

Planning MultiPex® Pipes heating systems.

Water systems must be designed and dimensioned according to DS 469, the Danish Society of Engineers standard for water systems, using water as heating element.

Systems can be designed by performing either a full calculation or a simple calculation. A full calculation requires excellent design knowledge and should be left to an engineer.

In order to facilitate dimensioning for simple calculation, Roth has created schedules (for dual-string systems) where pipe length and the desired heat level can be used as factors to find the proper dimension.

Two schedules have been created: one for feeder pipes and one for radiator outlets. Remember to use the calculated heat loss for the room, and not the radiator Watts!!

This is how it is done:

1. Select a schedule according to the pipe type (feeder or radiator outlet)
2. Enter the performance category "Watts" on the horizontal line.
3. Proceed vertically to the length that is at least equal to the current length and read off the dimension on the left.

NOTE! Only the one-way stretch needs to be measured; the return stretch in included in the schedules.

Feeder pipe schedule (35° C cooling)
The numbers in the fields indicate the max. length in meters.

Performance (Watt)	2000	3000	4000	5000	6000	7000	8000	9000	10000
15 mm (m)	55,3	27,6	16,8	11,2	7,8	6,2	4,9	3,9	3,1
18 mm (m)			58,7	37,6	29,3	22,3	17,7	13,8	11,7
22 mm (m)					78,3	62,6	47,0	37,6	31,3

Radiator outlet schedule (35° C cooling)
The numbers in the fields indicate the max. length in meters.

Performance (Watt)	500	1000	1500	2000	2500	3000	3500	4000
12 mm (m)		75,0	30,1	20,4	12,8	9,0	7,5	5,2
15 mm (m)				52,7	34,6	26,4	20,4	15,2

Preconditions for preparing the schedules:

Selected components:

Pump: Grundfos Alpha+ 25 - 40 0/1.4 mVc- 1 m³/h
Valves: Dual-string, as TA or Danfoss
System: Dual-string according to the Manifold pipe principle
Boiler: Unit with built-in pump

Pre-configured pressure loss:

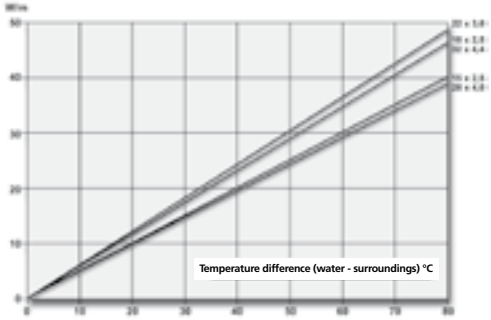
Valves: 2.5 kPa (max 3,000 Watts)
Boiler: 1.0 kPa (max 10,000 Watts)
Fittings: 0,0 kPa (incl. Manifold)
Radiator: 0.5 kPa (max 3,000 Watts)

Roth MultiPex® Pipe System

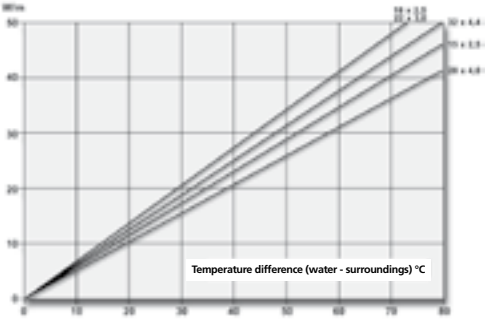
Heat emission from MultiPex® pipes.

Please refer to DS 452 for requirements and standards. The MultiPex® has a good insulation ability against heat emission and condensation when installing pipes-in-pipe as well as insulated pipes-in-pipe.

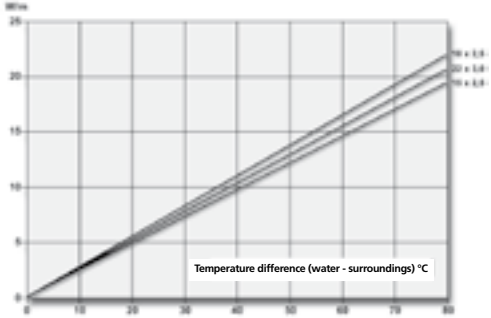
Roth MultiPex® pipe-in-pipe laid freely



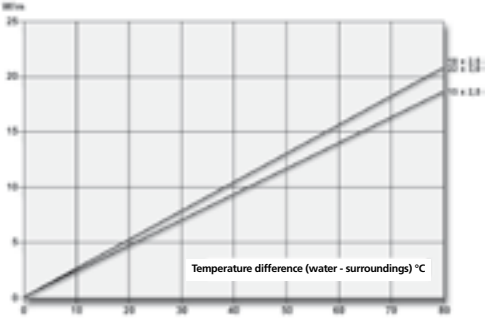
Roth MultiPex® pipe-in-pipe, cast in 50 mm concrete



Roth MultiPex® pipe-in-pipe, insulated, laid freely



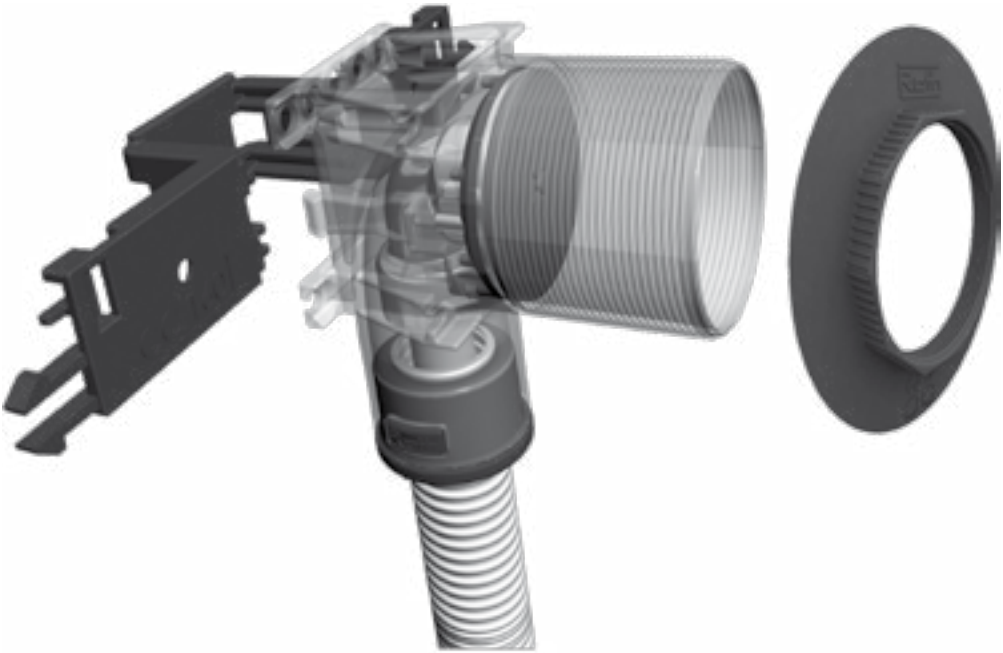
Roth MultiPex® pipe i pipe, insulated, cast in 50 mm concrete



NOTE! When placing pipes freely in the air without casing pipe compared with pipe-in-pipe without insulation, heat emission increases by approx. 30%. When insulated and embedded, heat emission increases approx. 20% compared with insulated and embedded pipe-in-pipe.

Roth QuickBox™ Coupling Canister

for walls and drywall



Description

The Roth QuickBox™ coupling canister for walls and drywall can be used for 12 mm as well as 15 and 18 mm PEX pipes in 20, 25, or 28 mm casing pipe.

The coupling canister is manufactured in transparent, solid cast plastic with a pre-installed brass elbow and a pressure test plug, as well as a rubber seal between the coupling canister and the casing pipe, which is approved pursuant to NT VVS 129 and fulfils the requirements of the SBI 200 guidelines.

The QuickBox™ is available as either a double canister with a TT plunge coupling for 12, 15, or 18 mm. The TT plunge coupling ensures a fast and secure assembly.

Application

- all types of heavy wall structures
- all types of drywalls with a thickness of 10-45 mm

Measurements:

Width:	50 mm
Height:	88 mm
Min. built-in length:	38 mm
Max. built-in length:	88 mm
Outside diameter of Canister neck:	52 mm

Roth QuickBox™ Coupling Canister

Technical description

The QuickBox™ coupling canister is solid cast in transparent plastic with a pre-installed brass elbow with a TT plunge coupling featuring a pressure test plug. In addition, the rubber seal between the canister and the casing pipe is likewise pre-installed. QuickBox™ can be used for heave wall structures as well as for light drywall structures.
For drywall structures, the front flange is used. It is screwed onto the thread of the canister neck, which thus squeezes the canister tight against the wallboard. In addition, the plastic fitting can be mounted on the back side of the drywall. QuickBox™ can be used for wall board that is from 10-45 mm thick. In the case of wall covering made of vinyl, PVC, etc., a special flange can be used, HVAC No. 087274.490.
Included with QuickBox™ coupling canisters for 12 mm PEX are rubber seals for both 20 and 25 mm casing pipes. QuickBox™ for 15 mm PEX is for 25 mm casing pipe, and QuickBox™ for 18 mm PEX is for 28 mm casing pipe.

Technical data

HVAC no.	Single QuickBox™ Coupling Canisters
087274.212	Roth QuickBox™ for wall, 12 mm TT
087274.215	Roth QuickBox™ for wall, 15 mm TT
087274.218	Roth QuickBox™ for wall, 18 mm TT
087277.212	Roth QuickBox™ for drywall, 12 mm TT
087277.215	Roth QuickBox™ for drywall, 15 mm TT
087277.218	Roth QuickBox™ for drywall, 18 mm TT

HVAC no.	Double QuickBox™ Coupling Canisters
087274.315	Roth QuickBox™ for wall, 15 mm TT, double
087277.315	Roth QuickBox™ for drywall, 15 mm TT, double

Accessories

HVAC no.
087288.250 QuickBox™ Roth QuickBox Fitting C/C 150 mm
087277.470 QuickBox™ Roth Mounting Kit for drywall
087277.465 QuickBox™ Roth QuickBox Mounting Rail
087289.290 QuickBox™ Roth Coatning Collar
087274.490 QuickBox™ Roth QuickBox Flange or Vinyl/PVC

Water & Drainage approval no.: VA 1.22/ 17364

Approved pursuant to NT VVS 129.

Tested by SBI pursuant to NT Build 448; meets the requirements of SBI Directive 180.

The plastic case is solid cast in transparent polycarbonate (PC), and the flange is cast in ABS.

The TT Elbow is made from dezincification brass with 1/2" fem. thread and TT plunge couplings for 12, 15, and 18 mm PEX pipes, respectively.

The cone is made of stainless steel, the washer is made of EPDM rubber, and the support is made of acetal plastic.

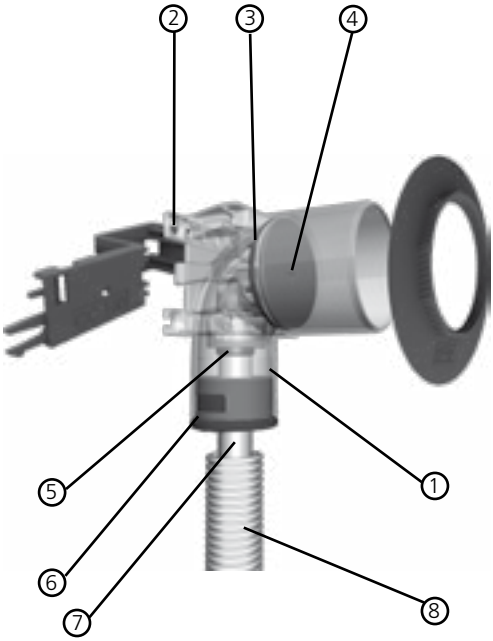
QuickBox™ Installation tips

The QuickBox™ coupling canister comes ready-made. Thus, the coupling canister has a very short installation time. Always make sure that the pipe is inserted far enough into the TT coupling. It can be a good idea to mark the pipe 23 mm from the end since this is the optimal insertion depth. Since the plastic case is transparent, it is easy to check whether the pipe is inserted deep enough.

The plastic box for the QuickBox™ for wall and drywall is the same. This is a great advantage since it allows for rapid moving of a coupling canister from wall to drywall by also purchasing the QuickBox™ installation kit for drywall This means that the neck can be too long. However, the neck can quite easily be cut down to an appropriate length using Roth Miller, HVAC no. 087289.210.

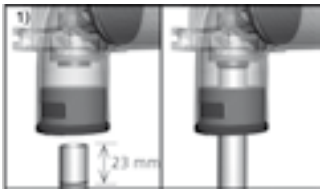
It is important that the cut on the end of the pipe is straight and without grooves. For this reason, a PEX cutter should always be used for cutting the pipes.

Do not expose Quickbox coupling canisters to gas leaks and highly corrosive environments.

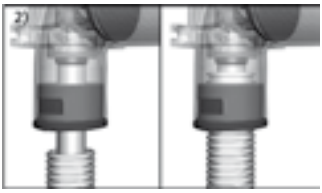


1. QuickBox™ transparent coupling canister
2. Hole for mounting rail for beams
3. ½" RG
4. Pressure test plug
5. TT coupling
6. Rubber gasket
7. PEX pipe
8. Casing pipe

Mounting Instructions for Roth QuickBox™ for walls



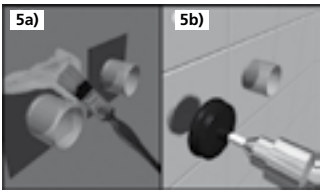
The pipes is cut with PEX cutter, and the casing pipe is cut 30 mm shorter than the PEX pipe. If the PEX pipe is already coupled to the Manifold, the installation will be facilitated by temporarily loosening the Manifold.
Mount the support bushing and mark the pipe 23 mm from the end. Insert the pipe into the coupling with a rotating movement and check that the insertion depth is 23 mm. Pull on the pipe to make sure it is tight.



The casing pipe needs to be cut fairly far down into the furrow. Make sure it does not have any sharp edges or burrs, and then insert the casing pipe straight into the rubber seal on the coupling canister with a slightly rotating movement until 1 or 2 grooves are visible inside the coupling canister. Do not use lubricant or any other helping tools.

The fitting is simple to mount on the coupling canisters, and it ensures a distance between of c-c 150 mm between two coupling canisters. The coupling canisters are pushed into the fitting until a light click is heard. The fitting can be disassembled by pushing in the two locking notches.

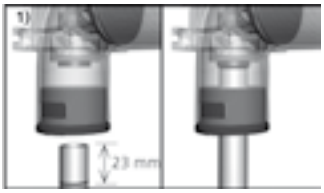
The fitting is installed with screws (included). It is always a good idea to perform a pressure test of the system. This is easy with QuickBox™ since it already features an installed pressure test plug. The pressure test plug is only intended for short pressure tests and as protection of the thread during the building phase.



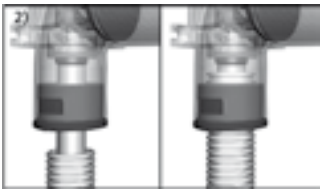
If the coupling canisters are installed in an area with dampness, a QuickBox™ coating collar will need to be installed (6a). When the wall covering is complete, the neck of the coupling canister can be shortened to an appropriate length by using a Roth miller (6b).

Mounting tool for QuickBox can be used. HVAC no. 087289.225

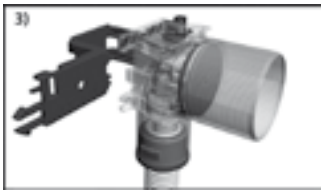
Mounting Instructions for Roth QuickBox™ for drywalls



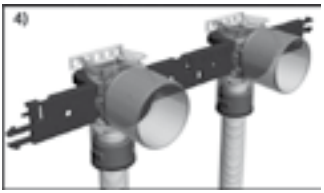
The pipe is cut with a PEX cutter, and the casing pipe is cut 30 mm shorter than the PEX pipe. If the PEX pipe is already connected to the Manifold, the installation will be facilitated by temporarily loosening the Manifold. Mount the support bushing and mark the pipe 23 mm from the end. Insert the pipe into the coupling with a rotating movement and check that the insertion depth is 23 mm. Pull on the pipe to make sure it is tight.



The casing pipe needs to be cut fairly far down into the furrow. Make sure it does not have any sharp edges or burrs, and then insert the casing pipe straight into the rubber seal on the coupling canister with a slightly rotating movement until 1 or 2 grooves are visible inside the coupling canister. Do not use lubricant or any other helping tools.

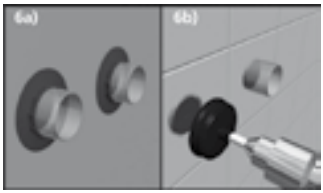


The plastic fitting can be used for supporting and possibly fastening the coupling canister to the drywall. In addition, two plastic fittings can be joined and used as a double fitting with a c-c distance of 150 mm or 160 mm, respectively. The coupling canisters are pushed into the fitting until a slight click is heard. The fitting can be disassembled again by pushing in the two locking notches.



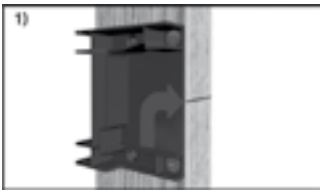
Two or more coupling canisters can be joined together with the plastic fitting, but always check that they are joined at the correct c-c distance. The fitting can be disassembled again by pushing in the two locking notches.

The QuickBox™ coupling canister is intended for boards that are 10-45 mm thick. Holes will need to be drilled using a Ø 52 mm hollow drill at the desired c-c distance, if applicable. The coupling canister is placed in the hole from the back side and is fastened using the provided screws. Use different screws when mounting on thin drywall.

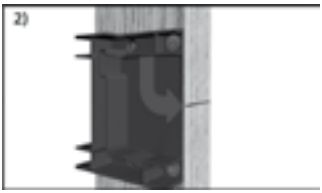


The front flange is attached by hand, or carefully with a pair of water pump pliers if necessary. It is always a good idea to pressure test the system. This is easy with QuickBox™ since it already features an installed pressure test plug. The pressure test plug is only intended for short pressure tests and as protection of the thread during the building phase (6a). When a wet room membrane and tiles are installed (if applicable), the neck of the coupling canister can be shortened to an appropriate length by using a Roth cutter (6b).

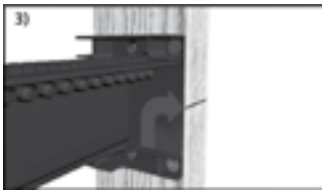
Mounting Instructions for Roth QuickBox™ for drywalls with mounting rail for beams



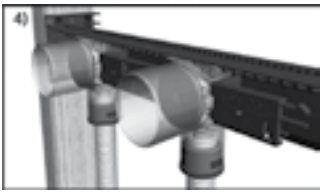
First, mark the beam at the height where the centre of the coupling canister is to be located. The end brackets are mounted using the provided screws with the arrow pointing at the mark for the centre height. The end brackets come in pairs with a right and a left version.



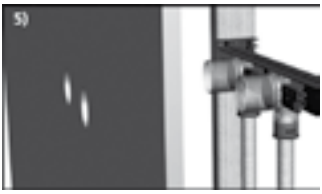
If the pipes come from above, the end brackets are simply turned upside-down. The brackets feature several holes so they can be used for wood as well as for metal beams The end brackets are 0 mm wide, but they can be shortened down to 50 mm.



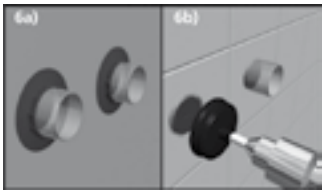
The actual mounting rail fits a beam distance of c-c 600 mm, but of course this can be reduced, of course. The mounting rail must be shortened to a length that is 6-8 mm shorter than the edge distance of the beams. The mounting rail is pushed into the end brackets until it is locked in place and a click is heard. It can be disassembled again by pushing down or up, depending on the mounting direction.



When the rail is mounted, the QuickBox ™ coupling canisters can be locked in place in the rails at the desired c-c distance. On the back side of the coupling canister there are holes that fit the pins in the mounting rail. The coupling canisters can be moved sideways at 10 mm intervals. A final adjustment can be made by moving the entire rail in the end brackets.

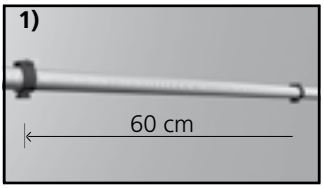


It is always a good idea to pressure test the system. This is easy with QuickBox™ since it already features an installed pressure test plug. The pressure test plug is only intended for short pressure tests and as protection of the thread during the building phase. The drywalls can now be installed after marking and drilling holes using a Ø 52 mm hollow drill.

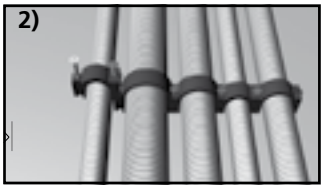


The front flange can now be attached by hand, or carefully with a pair of water pump pliers if necessary. When a wet room membrane and tiles are installed (if applicable), the neck of the coupling canister can be shortened to an appropriate length by using a Roth cutter (6b). In the case of wall covering made of vinyl, PVC, etc., a special flange can be used, HVAC No. 087274.490.

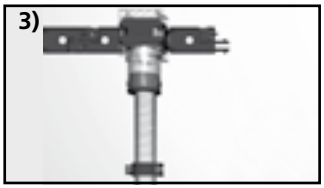
Mounting Instructions
Roth Brackets / Roth Fixation Plates



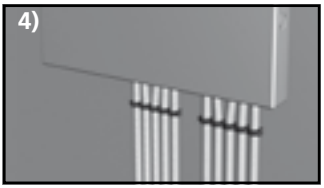
In order to facilitate any replacement of the PEX pipe in a casing pipe system, fixation of the casing pipe is important when the system is used for light structures. This is done by using fixation brackets that are adjusted to the casing pipe, locking it in place. The distance between the fixation brackets should not exceed 60 cm. Push the fixation brackets into the groove on the casing pipe, then screw into place (screw provided).



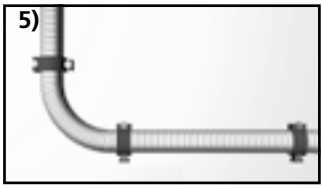
The brackets come in 20, 25, 28, and 34 mm and are designed in such a way that conditional dimensions can be squeezed together. The first bracket is pressed onto the pipe and is screwed tight. Then the next bracket can be pressed on to the first brackets and tightened, etc. All dimensions can be pressed together; hence, the order makes no difference.



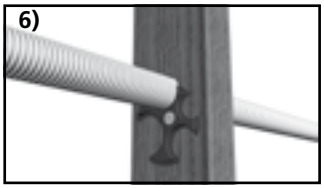
The fixation brackets need to be as close to the coupling canisters as possible. (15-30 cm).



Fixation is also important close to the Manifold/mounting case. (15-30 cm).



For pipe bends, one bracket is placed on each side of and as close to the bend as possible.



The fixation plate should be used for all pipe sleeves in light structures and is available in 20, 25, 28, and 34 mm. Find the right dimension and push the fixation plate into the groove on the casing pipe, then screw into place (screw provided).

Roth Multi Sleeve

Roth Multi Pipe Sleeves ensure proper and stable fixation of 15 mm MultiPex® pipes-in-pipe (25 mm casing pipe) through walls or floors. The Multi Sleeve comes equipped with screw holes, enabling fastening in all directions, with a built-in length of only 70 mm.

A wide array of mounting rails and mounting plates have been developed for the Multi Sleeve, making mounting in light structures, etc., fast and easy. The mounting rails are available with a hole distance c/c 40 or 50 mm. The mounting allows for hole distances of c/c 40, 50, 60, 100, 110, and 150 mm

Approved pursuant to Nordtestmetoden NT VVS 129.

Technical data

Roth Multi Sleeve
HVAC no. 087255.255
The sleeve is manufactured from black plastic (PA+GF). Approved pursuant to Nordtestmetoden NT VVS 129.

Accessories

Roth Multi End Seal
HVAC no. 087255.265
Used as a seal between the PEX pipe and the casing pipe when finishing with a fitting plate.

Roth Multi Mounting Rail c/c 40 mm
HVAC no. 087255.290
Length 600 mm

Roth Multi Mounting Rail c/c 50 mm
HVAC no. 087255.291
Length 600 mm

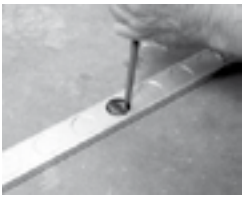
Roth Multi Coating Collar
HVAC no. 087289.286
Used as a seal for the Multi Sleeve in connection with the wet room membrane.

Roth Wall Attachment 15 mm x 3/4" w/ rosette
HVAC no. 728275.045
Used for connecting a shower head, among other devices.

Roth Wall Attachment 15 mm x 15 mm w/ rosette
HVAC no. 728275.115
Used for securing pipes out through the wall.

Roth Wall Attachment 15 mm x 15 mm w/o rosette
HVAC no. 728275.145
Used for securing pipes out through the wall.

Mounting Instructions Roth Multi Pipe Sleeve



Beat out the desired number of pellets with the desired distance (c/c 40 or c/c 50 mm) on the mounting rail.

Bend the ends of the rail so the total length matches the centre distance between the cross beams.

Screw the rail into the cross beams through the screw holes.

Place the MultiPex® pipe into the Sleeve as shown Make sure that the casing pipe sticks out far enough for it to penetrate the wall.

Twist the MultiPex® pipe into the 90° bend in the Sleeve.

The Multi Sleeve is placed on the rail and is pushed in until the locking springs lock in place. If the Sleeve is to be mounted on a wall that is thinner than 26 mm, it must be shortened before inserting the pipe.

If the Multi Sleeve is serve a wet room, the Sleeve must be equipped with a coating collar.

An end seal is used if a fitting disk is desired in the end. The end seal is rubbed with some silicone to facilitate mounting of the end seal.

The mounting of the fitting disk is completed by screwing it tight. Remember to pre-drill with a 4 mm drill bit.

The wall attachment provides an alternative completion and features a washer that fits snugly against the PEX pipe and the casing pipe. The casing pipe should stick approx. 5 mm outside the finished casing. The wall attachment is "turned" in place in the casing pipe so the washer is properly positioned.

A pre-drilling is perforwith in the tiles using a 4 mm bit before the wall attachment is screwed tight through the Mounting Rail. Make sure that the screws do not enter the pipe in the wall.

A tightening ring and a support bushing are pushed onto the PEX pipe Make sure that they are all the way in before screwing on the threaded nut. The transparent ball race is placed on the rosette prior to mounting. Be aware that the drain hole must face down.

Roth QuickSkab™ manifold cabinet

For safe pex installations.

Description

The Roth QuickSkab™ cabinet can be used together with Roth Manifolds for domestic water and heating installations. The waterproof cabinets have been certified together with Roth MultiPex® piping system according to NT 129 and meet the requirements of DS439 and BR10. The cabinets come with ready-assembled, waterproof ducts in top and bottom and side knock-out holes for supply pipes. The specially-designed, pull-resistant ducts allow for extremely easy and safe mounting of the casing pipes. Further, the cabinet has no steel parts that can get into contact with water, so no corrosion risk exists. Roth QuickSkab™ can be mounted in its basic version or with door and frame in painted metal, where special, attractive finish is needed.

Technical description

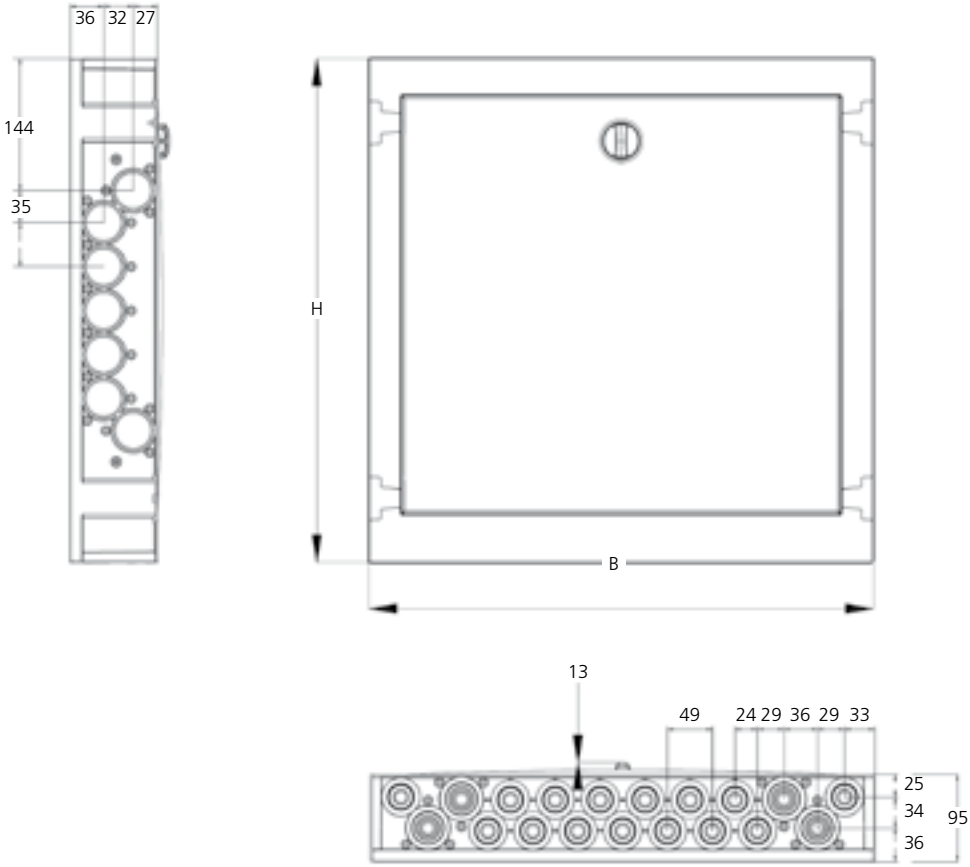
Roth QuickSkab™ is made from ABS plastic in RAL 9010 white with lockable door. The cabinets are available in three widths, 400, 550 and 800 mm, all 550 mm high. Cabinet depth is 95 mm. The waterproof cabinets come with ready-assembled ducts for casing pipes in both top and bottom, side knock-outs, Roth Quick brackets for mounting of all Roth Manifold pipe types and overflow. The cabinets accommodate manifolds with both 5, 8 and 13 cross-mounted ramifications (400, 550, 800) or individual layout. The cabinet rear wall carries a hole template that allows easy and flexible mounting of bearings/Roth Quick brackets. Furthermore, pipes can be led into the cabinet from both top and bottom.

Areas of use

- Floor heating systems
- Domestic water
- Radiator facilities

Roth QuickSkab™ manifold cabinet

Dimension sketch in mm



Number of ready-assembled pipe ducts

Cabinet size	B	H	D	Dim. 16-28 mm	Dim. 25-34 mm
400	400	550	95	18	8
550	550	550	95	30	8
800	800	550	95	50	8

* where Roth pipe ducts, HVAC no. 046297.542, are used, 42 mm casing pipes can be used.

Technical data:

Roth waterproof cabinet	400 x 550 mm
HVAC no.	046297.504
Roth waterproof cabinet	550 x 550 mm
HVAC no.	046297.506
Roth waterproof cabinet	800 x 550 mm
HVAC no.	046297.508

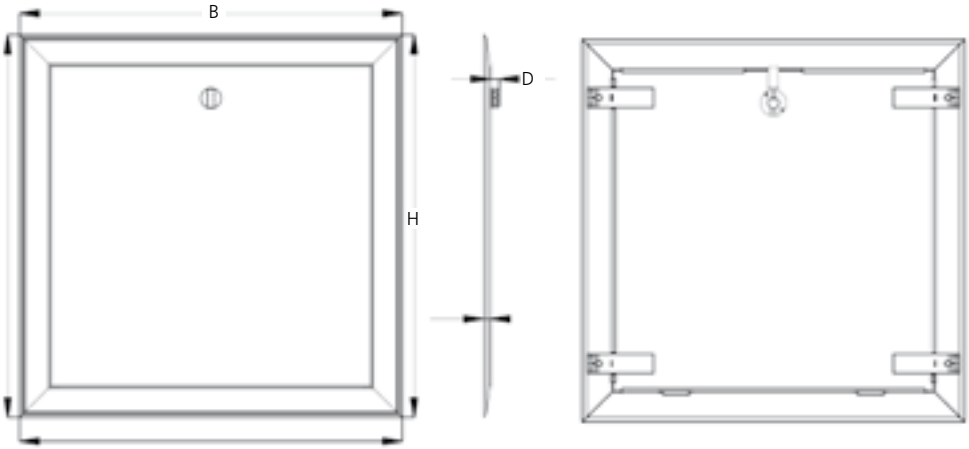
Accessories:

Steel frame/door ..... see next page
Roth duct 16-28 mm
HVAC no. 046297.525
Roth duct 25-34 mm
HVAC no. 046297.534
Roth duct 42 mm
HVAC no. 046297.542

Roth QuickSkab™ manifold cabinet

Frame and door for Roth QuickSkab™

Dimension sketch
Measurements in mm

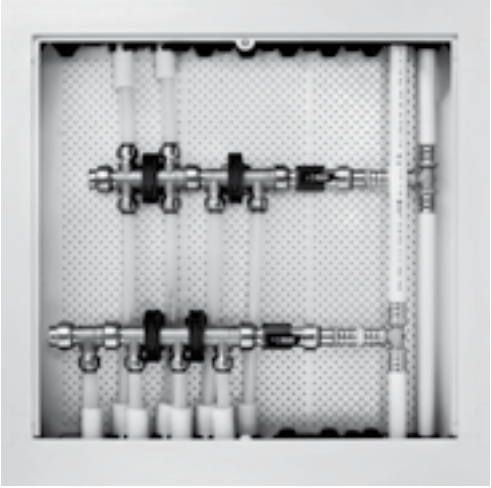


Cabinet size	B	H	D
400	440	590	11
550	590	590	11
800	840	590	11

The frame and the door are adjustable and can be mounted directly in the QuickSkab™ with distances of 0-60 mm. Where deep cabinet mounting is needed, the frame and door can be mounted on beams.

Technical data:

Roth frame/door	400 x 550 mm
HVAC no.	046297.514
Roth frame/door	550 x 550 mm
HVAC no.	046297.516
Roth frame/door	800 x 550 mm
HVAC no.	046297.518



Example of installation with MultiPex and Alu-LaserPlus piping systems

Roth Quickskab™ – mini manifold cabinet

Description

Roth waterproof Quickskab™ - mini is installable as a waterproof solution in kitchen cupboards, etc., and can accommodate all couplings in standard kitchen installations, including ramifications for dishwashers, etc. The waterproof Quickskab™ meets the requirements of DS439, BR10 and the Norwegian TEK10.

The Quickskab comes with ready-assembled, waterproof ducts at the bottom and coupling facilities for hoses or pipes at the sides and top.
The specially-designed, pull-resistant ducts at the bottom allow for extremely easy and safe mounting of the casing pipes and overflow. Rubber seals are delivered in a bag with the cabinet, allowing for flexible connections of pipes and hoses at the top and sides (sizes 8, 10, 12 and 15 mm).

The Quickskab has no steel parts that can get into contact with water, so no corrosion risk exists.

Areas of use
- Domestic water
- Floor heating systems

Roth Quickskab™ – mini manifold cabinet

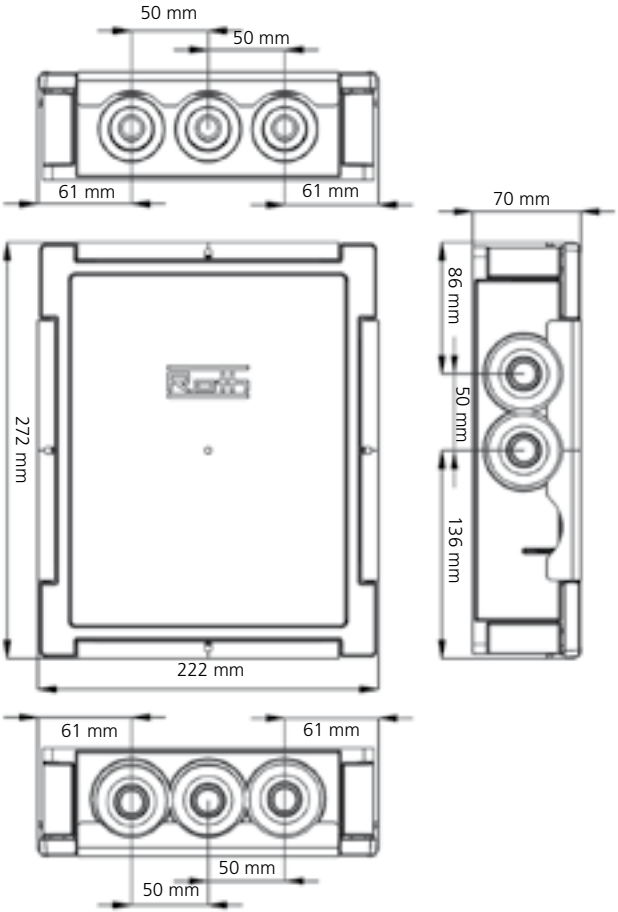
Technical description

Roth waterproof QuickSkab™ - mini is made from ABS plastic in RAL 9010 white and is lockable with four "click" brackets. The cabinets come with ready-assembled ducts for casing pipes in the bottom and ducts at the top and sides. Easily removable knock-outs and flexible Roth Quick brackets are also pre-mounted. The cabinet rear wall carries a hole template that allows easy and flexible mounting of bearings/Roth Quick brackets.

Extra selectable accessories are separate miniManifold and complete mounting kit for hot and cold domestic water connections. The kits contain Roth miniManifold, pipe fixation plates, plugs, support bushings and Roth transition nipples TT or Roth ball valve TT.

Technical data:

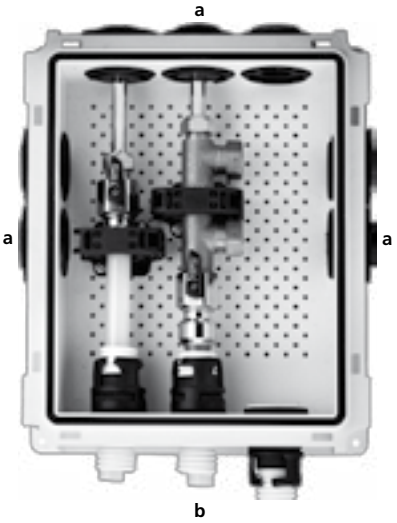
Roth waterproof Quickskab™ - mini
220 x 270 mm
HVAC no. 046297.520



Roth Quickskab™ – mini manifold cabinet

Roth Quickskab™ - mini
mounted with miniManifold kits with isolation

Cabinet type	Holes (a) 8-15 mm	Pipe - ducts (a) 8, 10, 12, 15 mm	Pipe - ducts (b) 16 - 28 mm
Roth waterproof Quickskab™ - mini	7 items	4 x 4 items	3 items



As extra accessories, Roth Nordic has developed a short miniManifold pipe in dezincification brass in the optimum dimensions. The MiniManifold pipe can be ordered separately or as a kit in two versions.

MiniManifold

MiniManifold kit w. shut off (Kit 1)
HVAC no. 046297.613
1 Roth miniManifold 3/8"x1/2"
2 Pipe fixations 3/8" x 10 mm
2 Roth ball valves 3/8"x15 mm,
2 Roth support bushings for 15 mm PEX
2 plugs 1/2"

MiniManifold kit (Kit 2)
HVAC no. 046297.623
1 Roth miniManifold 3/8"x1/2"
2 Pipe fixations 3/8" x 10 mm
2 Roth insertion coupling 3/8" x 15 mm
2 Roth support bushings for 15 mm PEX
2 plugs 1/2"

MiniManifold
HVAC no. 046297.603
1 Roth miniManifold 3/8"x1/2"

Roth TT Manifold

Roth TT Manifold pipes are manufactured in non-dezincification brass. With their 1, 2, 3, and 2+2 splits, they provide the opportunity to always assemble a Manifold pipe with the desired number of splits.

The Manifold pipe can be used for both domestic water and heating systems, as well as cooling systems. TT Manifold pipe splits are available for 12, 15, and 18 mm pipes.

The ends of the Manifold pipe are a 22 mm insertion connector and a 22 mm spigot end, respectively.

Several Manifold pipes are easily joined by inserting the spigot ends into the insertion connectors.

Technical description

Roth TT Manifold pipes with a fixed insertion connector are used for connecting MultiPex® pipes as well as CU pipes.

The Manifold pipes come with PEX pipe support bushings on the splits.

The ends of the Manifold pipe consist of a 22 mm insertion connector and a 22 mm spigot end, respectively.

Several Manifold pipes are easily joined by inserting the spigot ends into the insertion connectors.

Technical data

HVAC no.
Roth TT Manifold 1 split.x12 mm,
incl. support bushing 046221.212
Roth TT Manifold 1 split.x15 mm,
incl. support bushing 046221.215
Roth TT Manifold 1 split.x18 mm,
incl. support bushing 046221.218
Roth TT Manifold 2 split.x12 mm,
incl. support bushing 046222.212
Roth TT Manifold 2 split.x15 mm,
incl. support bushing 046222.215
Roth TT Manifold 2 split.x18 mm,
incl. support bushing 046222.218
Roth TT Manifold 3 split.x12 mm,
incl. support bushing 046223.212
Roth TT Manifold 3 split.x15 mm,
incl. support bushing 046223.215
Roth TT Manifold 2x2 split.x15 mm kryds,
incl. support bushing 46224.215

Operating pressure: ..... max. 10 bar (145 PSI)
Operating temperature: ..... max. 100 °C

Water & Drainage approval no.: 1.22/19348.

The Manifold pipes are manufactured from dezincification brass. The cone is made of stainless steel, the washer is made of EPDM rubber, and the support is made of acetal plastic. The main pipe consists of a 22 mm insertion connector and a 22 mm spigot end, respectively.

Roth TT Manifold

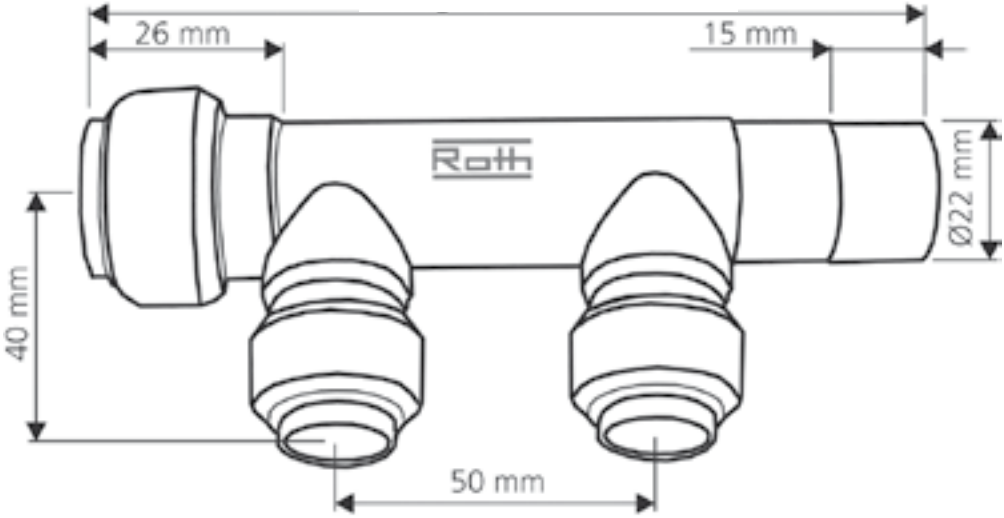
Accessories

	HVAC no.
Mounting kit 3/4"	046296.206
22 mm TT sealing cap	047187.022
22 mm TT plug	046219.222
15 mm TT plug	046219.220
22 mm TT Ball Valve M/N	046220.222
18 mm TT Ball Valve M/N	046220.218
15 mm TT Ball Valve M/N	046220.215
22 x 18 mm TT Reducer	047151.272
22 x ¾" TT Transition, nipple	047160.022
22 x ¾" TT Transition, socket	047165.022

Sketch of dimensions

Ramifications:

1 ..... = 81 mm
2 x 2 and 2 ..... = 131 mm
3 ..... = 181 mm



Roth EURO Manifold

Roth TT Manifold pipes are manufactured from non-dezincification brass. With their 2, 3, and 4splits, they provide the opportunity to always assemble a Manifold pipe with the desired number of splits.

The Manifold pipe can be used for both domestic water and heating systems.

The splits on the EURO Manifold pipe feature a 3/4" EURO thread. PEX EURO Manifold couplings are available in the following sizes: 10.5, 12, 15, 16, 17, 18, and 20 mm. The Manifold couplings have to be ordered separately.

The Manifold pipes come equipped with a 3/4" nipple and a socket so they can be easily joined. Regular packing yarn/ joint paste, etc. is used for this purpose.

Technical description

Roth EURO Manifold pipes are used for connecting PEX pipes, with or without oxygen stop, as well as Alu-LaserPLUS.

The Manifold pipes come equipped with a 3/4" RG nipple in one end and a 3/4" socket RG in the other end. The Manifold pipes can be joined with the desired number of splits.

Technical data

HVAC no.
Roth EURO Manifold pipe, 2 outlets 046215.230
Roth EURO Manifold pipe, 3 outlets 046216.230
Roth EURO Manifold pipe, 4 outlets 046217.230
Operating pressure: ..... max. 16 bar (145 PSI)
Operating temperature: ..... max. 100 °C

Roth Manifold Coupling for PEX:
HVAC no.
Roth Manifold Coupling 10.5 mm x 3/4" EURO* 401974.810
Roth Manifold Coupling 12 mm x 3/4" EURO ... 401974.812
Roth Manifold Coupling 15 mm x 3/4" EURO ... 401974.815
Roth Manifold Coupling 16 mm x 3/4" EURO ... 401974.816
Roth Manifold Coupling 17 mm x 3/4" EURO* . 401974.817
Roth Manifold Coupling 18 mm x 3/4" EURO ... 401974.818
Roth Manifold Coupling 20 mm x 3/4" EURO ... 401974.820

* The Roth Manifold Coupling 10.5 mm x 3/4" and 17 mm x 3/4" is not Water and Drainage approved.

Roth Manifold Couplings for 16 and 20 mm can be used on both PEX and Alu-LaserPLUS and are included in the system approval of Roth Alu-LaserPLUS.

Water & Drainage approval no.: 1.22/19990 for the compression couplings.

The Manifold pipes are manufactured from dezincification brass. The main pipe comes with a 3/4" RG nipple and a 3/4" RG connector. The splits feature a 3/4" EURO thread.

The fitting is fastened according to the following instructions: Pull the connector tight by hand and tighten all the way around once using an appropriately-sized tool.

Roth EURO Manifold

Accessories

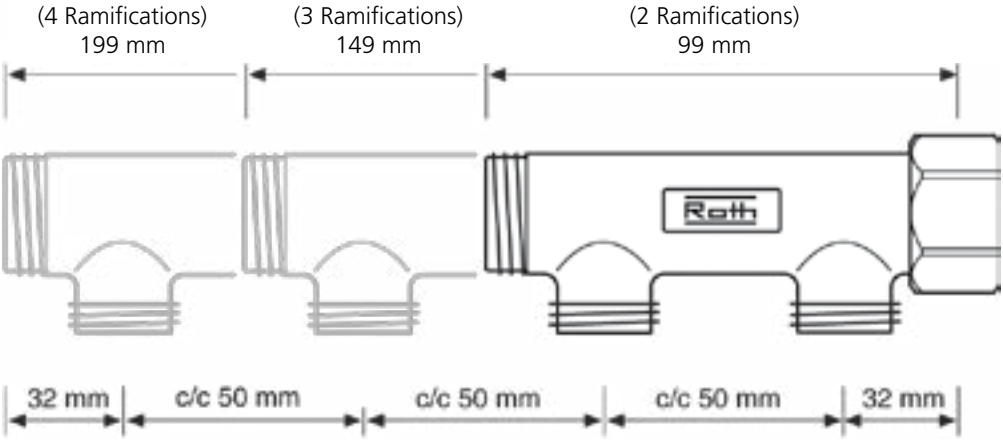
HVAC no.
Roth Sealing Cap for EURO Manifold pipe 048300.106

Mounting kit 3/4"..... 046296.206

Manifold Cabinets are available in steel as well as plastic.
Note that Roth's Waterproof Manifold Cabinets come with an integrated mounting kit.

See the special brochure for further information.

Sketch of dimensions



Roth Roth MultiUnit™

Installation unit for floor heat and domestic water

Roth MultiUnit™ is used in conjunction with Roth MultiPex® systems and Roth floor heating systems. Roth MultiUnit™ allows for a simple, inexpensive installation of the Manifold pipes, either at the construction site or as prefab.

The MultiUnit™ system is manufactured from 1.2 mm galvanized steel, and it is therefore suitable for the humid climate of a construction site. The MultiUnit™ comes complete with pipe brackets for 18 mm pipes, as well as bolts/nuts for mounting the domestic water Manifold and the floor heat Manifold, in addition to strips for fastening any spikes.

The mounting rails are shaped as sliding rails, making the mounting flexible since the bolts for the bearings are able to slide horizontally.

Technical data

HVAC no.	402000.200
Width	560 mm
Height	590 mm
Depth	155 mm
Depth (with Manifold without shunt)	235 mm
Depth (with shunt placed perpendicular to Manifold)	520 mm

Accessories

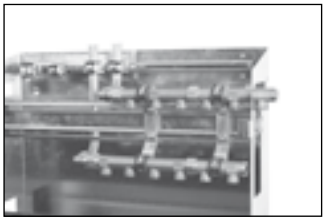
All-stainless steel pipe kit in 18 mm with couplings
HVAC no. 402000.918

Roth Roth MultiUnit™

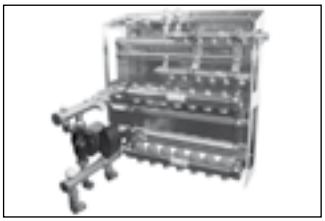
Assembly Instructions

The installation is easily perforwith with screws (provided). Spikes can be used if there is no wall for installation. The corners of the MultiUnit™ feature holes for attaching the spikes.

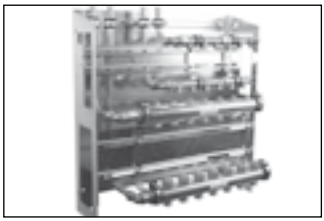
Prior to mounting the Manifolds, the detachable rail must be removed. Lift up on the rail and push it away from the attachment.



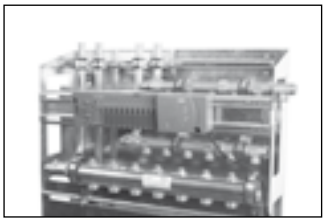
The Manifolds are easily mounted in the rails with T-bolts (provided). The Multi- Unit™ is stamped out on the sides, enabling the Manifolds to be extended out over the sides of the MultiUnit™ (as illustrated).
The pipes from the pipe kit and the PEX pipes can now be connected.
The width of the MultiUnit™ allows for room for 7 and 8 outlets, respectively, for domestic water.



If a shunt needs to be installed, this is done perpendicular to the Manifold with the pipe elbows from the pipe kit. A tap extension from the pipe kit is attached to the flow of the shunt, allowing outflow pipes and return pipes to be placed above/below each other.
Prior to attaching the shunt to the Manifold, the 25 mm brass extension is detached from the bottom section of the shunt and is then attached to the top part of the shunt.
Of course, the floor heat Manifold can be extended out over the sides of the Multi- Unit™.
The shunt can also be installed on the right side of the Manifold.



If no shunt is to be installed, hexagon nipples and tap extensions from the pipe kit are used (as illustrated). The tap extension is installed on the Manifold pipe, the connection pipe for which needs to be placed the farthest toward the corner.
If no shunt is used, the pipes from the pipe kit will need to be shortened. The floor heating pipes and, if applicable, the 18 x 3/4" transitions can now be installed and brought to the boiler, the water heater, etc.
The width of the MultiUnit™ leaves room for 7 outlets to the floor heater.



When the last pipe work has been completed, the detachable rail can be installed again and on top of that the Touchline™ regulator (nuts and bolts provided).

Roth Ion Trap

Used for separating CU pipes from steel pipes.

Application:

Roth ion traps are used in domestic water systems to reduce the risk of corrosion by the splits from steel to copper pipes.

Roth ion traps can be used for both cold and hot water.

Roth ion traps are available in the following sizes: 12, 15, 18, 18, and 22 mm. They include 2 support bushings.

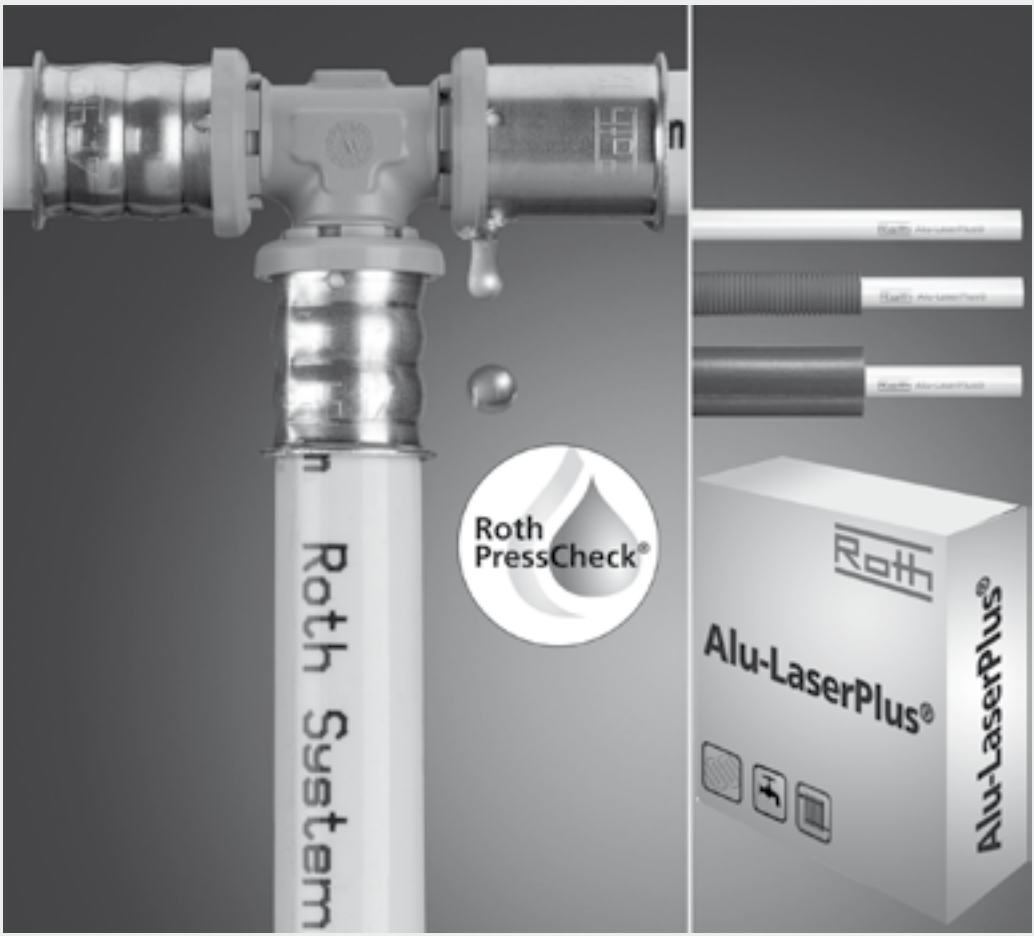
Technical data:

Roth Ion trap ..... 087257 xxx
Operating pressure max. ..... 10 bar (145 PSI)
Operating temperature max. ..... 90°C

Roth ion traps are manufactured from Water & Drainage approved pipes, approval no. VA 1.14/18077

Roth Alu-LaserPlus® Pipe System

Product Range



... living full of energy!

Roth Alu-LaserPlus® pipes

ITEM	DESCRIPTION		UNIT	PACK	HVAC No.
	Roth Alu-LaserPlus® pipes The Alu-LaserPlus® pipe is a quality product developed for water and heating systems. The pipe is made up of 5 layers. The inside consists of a pipe, adhesive material, a laser welded aluminum covering, and adhesive material. The outside features a protective PE layer. The aluminum covering makes the pipe stable in shape and diffusion tight. VA (Water & Drainage) approval no. 1.14/19173. Max. operating temperature: 70°C Max. operating pressure: 10 bar (145 PSI)				
	Roth Alu-LaserPlus® pipe 16 x 2.0 mm	50 m	roll	1	087100.215
	Roth Alu-LaserPlus® pipe 16 x 2.0 mm	100 m	roll	1/6	087100.216
	Roth Alu-LaserPlus® pipe 16 x 2.0 mm	240 m	roll	1/4	087100.246
	Roth Alu-LaserPlus® pipe 16 x 2.0 mm	500 m	roll	1/2	087100.276
	Roth Alu-LaserPlus® pipe 20 x 2.0 mm	100 m	roll	1/6	087100.220
	Roth Alu-LaserPlus® pipe 20 x 2.0 mm	240 m	roll	1/4	087100.250
	Roth Alu-LaserPlus® pipe 26 x 3.0 mm	25 m	roll	1/8	087100.226
	Roth Alu-LaserPlus® pipe 16 x 2.0 mm	3,2 m	lgth	1/22	087101.216
	Roth Alu-LaserPlus® pipe 20 x 2.0 mm	3,2 m	lgth	1/10	087101.220
	Roth Alu-LaserPlus® pipe 26 x 3.0 mm	3,2 m	lgth	1/9	087101.226
	Roth Alu-LaserPlus® pipe 32 x 3.0 mm	3,2 m	lgth	1/5	087101.232
	Roth Alu-LaserPlus® pipe 40 x 3.5 mm	3,2 m	lgth	1/2	087101.240
	Roth Alu-LaserPlus® pipe 50 x 4.0 mm	3,2 m	lgth	1	087101.250
	Roth Alu-LaserPlus® pipe 63 x 4.5 mm	3,2 m	lgth	1	087101.263
	Roth Alu-LaserPlus® pipe 16 x 2.0 mm	5,0 m	lgth	1/22	087101.516
	Roth Alu-LaserPlus® pipe 20 x 2.0 mm	5,0 m	lgth	1/10	087101.520
	Roth Alu-LaserPlus® pipe 26 x 3.0 mm	5,0 m	lgth	1/9	087101.526
	Roth Alu-LaserPlus® pipe 32 x 3.0 mm	5,0 m	lgth	1/5	087101.532
	Roth Alu-LaserPlus® pipe 40 x 3.5 mm	5,0 m	lgth	1/2	087101.540
	Roth Alu-LaserPlus® pipe 50 x 4.0 mm	5,0 m	lgth	1	087101.550
	Roth Alu-LaserPlus® pipe 63 x 4.5 mm	5,0 m	lgth	1	087101.563
	Roth Alu-LaserPlus® pipe, with insulation				
	Roth Alu-LaserPlus® pipe PLUS 16 x 2.0 mm 50 m Insulation: Dpth/Diam. in mm = 38/20		roll	1/4	087102.216
	Roth Alu-LaserPlus® pipe PLUS 20 x 2.0 mm 50 m Insulation: Dpth/Diam. in mm = 45/27		roll	1/4	087102.220
	Roth Alu-LaserPlus® pipe PLUS 26 x 3.0 mm 25 m Insulation: Dpth/Diam. in mm = 52/32		roll	1/4	087102.226
	Roth Alu-LaserPlus® pipe PLUS 32 x 3.0 mm 25 m Insulation: Dpth/Diam. in mm = 64/38		roll	1/8	087102.232
	Roth Alu-LaserPlus® pipe, with insulation, X-PLUS				
	Roth Alu-LaserPlus® pipe X-PLUS 26 x 3.0 mm 25 m Insulation: Dpth/Diam. in mm = 72/32		roll	1/4	087103.226
	Roth Alu-LaserPlus® pipe X-PLUS 32 x 3.0 mm 25 m Insulation: Dpth/Diam. in mm = 78/38		roll	1/4	087103.232
	Roth Alu-LaserPlus® pipe in pipe				
	Roth Alu-LaserPlus® pipe-in-pipe 16 x 2.0 mm 50 m Casing pipe: Dpth/Diam. in mm = 25/20		roll	1/6	087104.216
	Roth Alu-LaserPlus® pipe-in-pipe 20 x 2.0 mm 50 m Casing pipe: Dpth/Diam. in mm = 34/29		roll	1/6	087104.220
	Roth Alu-LaserPlus® pipe-in-pipe 26 x 3.0 mm 25 m Casing pipe: Dpth/Diam. in mm = 34/29		roll	1/6	087104.226
	Roth Alu-LaserPlus® pipe-in-pipe 32 x 3.0 mm 25 m Casing pipe: Dpth/Diam. in mm = 42/36		roll	1/6	087104.232

Roth PressCheck® Fittings

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	MS Elbow			
	Roth MS Elbow 90°, 63 x 63 mm	ea.	1/10	045650.063
	Roth MS Elbow 45°, 50 x 50 mm	ea.	1/10	045653.050
	Roth MS Elbow 45°, 63 x 63 mm	ea.	1/10	045653.063
	MS Transition Elbow			
	Roth MS Transition Elbow 16 x ¾" nipple	ea.	1/10	045651.185
	Roth MS Transition Elbow 16 x ½" nipple	ea.	1/10	045651.189
	Roth MS Transition Elbow 20 x ½" nipple	ea.	1/10	045651.239
	Roth MS Transition Elbow 20 x ¾" nipple	ea.	1/10	045651.246
	Roth MS Transition Elbow 26 x ¾" nipple	ea.	1/5	045651.310
	Roth MS Transition Elbow 26 x 1" nipple	ea.	1/5	045651.315
	Roth MS Transition Elbow 32 x 1" nipple	ea.	1/5	045651.382
	Roth MS Transition Elbow 32 x 1¼" nipple	ea.	1/5	045651.032
	Roth MS Transition Elbow 40 x 1¼" nipple	ea.	1/5	045651.420
	Roth MS Transition Elbow 50 x 1½" nipple	ea.	1/5	045651.445
	Roth MS Transition Elbow 16 x ½" connector	ea.	1/10	045652.189
	Roth MS Transition Elbow 20 x ½" connector	ea.	1/10	045652.239
	Roth MS Transition Elbow 20 x ¾" connector	ea.	1/10	045652.246
	Roth MS Transition Elbow 26 x ¾" connector	ea.	1/5	045652.310
	Roth MS Transition Elbow 26 x 1" connector	ea.	1/5	045652.315
	Roth MS Transition Elbow 32 x 1" connector	ea.	1/5	045652.382
	Roth MS Transition Elbow 32 x 1¼" connector	ea.	1/5	045652.032
	Roth MS Transition Elbow 40 x 1½" connector	ea.	1/5	045652.040
	Roth MS Transition Elbow 50 x 1½" connector	ea.	1/5	045652.445
	MS Transition			
	Roth MS Transition Nipple 16 x 3/8"	ea.	1/10	045656.185
	Roth MS Transition Nipple 16 x ½"	ea.	1/10	045656.189
	Roth MS Transition Nipple 16 x ¾"	ea.	1/10	045656.195
	Roth MS Transition Nipple 20 x ½"	ea.	1/10	045656.239
	Roth MS Transition Nipple 20 x ¾"	ea.	1/10	045656.246
	Roth MS Transition Nipple 26 x ¾"	ea.	1/5	045656.310
	Roth MS Transition Nipple 26 x 1"	ea.	1/5	045656.315
	Roth MS Transition Nipple 32 x 1"	ea.	1/5	045656.382
	Roth MS Transition Nipple 32 x 1¼"	ea.	1/5	045656.032
	Roth MS Transition Nipple 40 x 1¼"	ea.	1/5	045656.420
	Roth MS Transition Nipple 50 x 1½"	ea.	1/5	045656.445
	Roth MS Transition Nipple 63 x 2"	ea.	1/5	045656.467
	Roth MS Transition Socket 16 x ½"	ea.	1/10	045657.189
	Roth MS Transition Socket 16 x ¾"	ea.	1/10	045657.195
	Roth MS Transition Socket 20 x ½"	ea.	1/10	045657.239
	Roth MS Transition Socket 20 x ¾"	ea.	1/10	045657.246
	Roth MS Transition Socket 26 x ¾"	ea.	1/5	045657.310
	Roth MS Transition Socket 26 x 1"	ea.	1/5	045657.315
	Roth MS Transition Socket 32 x 1"	ea.	1/5	045657.382
	Roth MS Transition Socket 32 x 1¼"	ea.	1/5	045657.032
	Roth MS Transition Socket 40 x 1½"	ea.	1/5	045657.040
	Roth MS Transition Socket 40 x 1¼"	ea.	1/5	045657.420
	Roth MS Transition Socket 50 x 1½"	ea.	1/5	045657.445
	Roth MS Transition Socket 63 x 2"	ea.	1/5	045657.467

Roth PressCheck® Fittings

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	MS Press Transition			
	Roth MS Press Transition 16 x ø10 mm nipple	ea.	1/10	045658.182
	Roth MS Press Transition 16 x ø12 mm nipple	ea.	1/10	045658.186
	Roth MS Press Transition 16 x ø15 mm nipple	ea.	1/10	045658.189
	Roth MS Press Transition 20 x ø18 mm nipple	ea.	1/10	045658.243
	Roth MS Press Transition 20 x ø22 mm nipple	ea.	1/10	045658.246
	Roth MS Press Transition 26 x ø22 mm nipple	ea.	1/5	045658.310
	Roth MS Press Transition 26 x ø28 mm nipple	ea.	1/5	045658.315
	Roth MS Press Transition 32 x ø28 mm nipple	ea.	1/5	045658.389
	Roth MS Press Transition 32 x ø35 mm nipple	ea.	1/5	045658.388
	Roth MS Press Transition 16 x ø15 mm	ea.	1/10	045659.189
	Roth MS Press Transition 16 x ø18 mm	ea.	1/10	045659.192
	Roth MS Press Transition 20 x ø18 mm	ea.	1/10	045659.243
	Roth MS Press Transition 20 x ø22 mm	ea.	1/10	045659.246
	Roth MS Press Transition 26 x ø22 mm	ea.	1/5	045659.310
	Roth MS Press Transition 32 x ø28 mm	ea.	1/5	045659.382
	MS Tee			
	Roth MS Tee 63 x 63 x 63 mm	ea.	1/10	045660.063
	Roth MS Tee 40 x 32 x 32 mm	ea.	1/10	045660.419
	Roth MS Tee 50 x 20 x 50 mm	ea.	1/10	045660.435
	Roth MS Tee 50 x 26 x 50 mm	ea.	1/10	045660.437
	Roth MS Tee 50 x 32 x 50 mm	ea.	1/10	045660.440
	Roth MS Tee 63 x 26 x 63 mm	ea.	1/10	045660.462
	Roth MS Tee 63 x 32 x 63 mm	ea.	1/10	045660.463
	Roth MS Tee 63 x 40 x 63 mm	ea.	1/10	045660.464
	Roth MS Tee 63 x 50 x 63 mm	ea.	1/10	045660.465
	Roth MS Tee 63 x 50 x 50 mm	ea.	1/10	045660.469
	Roth MS Tee 16 x ½" connector x 16 mm	ea.	1/10	045662.189
	Roth MS Tee 20 x ½" connector x 20 mm	ea.	1/10	045662.239
	Roth MS Tee 20 x ¾" connector x 20 mm	ea.	1/10	045662.246
	Roth MS Tee 26 x ½" connector x 26 mm	ea.	1/5	045662.302
	Roth MS Tee 26 x ¾" connector x 26 mm	ea.	1/5	045662.306
	Roth MS Tee 32 x ½" connector x 32 mm	ea.	1/5	045662.365
	Roth MS Tee 32 x ¾" connector x 32 mm	ea.	1/5	045662.371
	Roth MS Tee 40 x ¾" connector x 40 mm	ea.	1/5	045662.414
	Roth MS Tee 40 x 1" connector x 40 mm	ea.	1/5	045662.417
	Roth MS Tee 50 x 1" connector x 50 mm	ea.	1/5	045682.437
	Roth MS Tee 63 x 1" connector x 63 mm	ea.	1/5	045662.466
	MS Screw Joint			
	Roth MS Screw Joint 16 x 3/8" diversion	ea.	1/10	045663.185
	Roth MS Screw Joint 16 x ½" diversion	ea.	1/10	045663.189
	Roth MS Screw Joint 16 x ¾" diversion	ea.	1/10	045663.195
	Roth MS Screw Joint 20 x ¾" diversion	ea.	1/10	045663.246
	Roth MS Screw Joint 26 x ¾" diversion	ea.	1/10	045663.310
	Roth MS Screw Joint 26 x 1" diversion	ea.	1/10	045663.315
	Roth MS Screw Joint 32 x 1¼" diversion	ea.	1/10	045663.032
	MS Straight-Through Joint			
	Roth MS Straight-Through Joint 63 x 63 mm	ea.	1/10	045666.063
	Roth MS Straight-Through Joint 40 x 26 mm	ea.	1/10	045666.417
	Roth MS Straight-Through Joint 50 x 32 mm	ea.	1/10	045666.440
	Roth MS Straight-Through Joint 63 x 40 mm	ea.	1/10	045666.464
	Roth MS Straight-Through Joint 63 x 50 mm	ea.	1/10	045666.465

Roth PressCheck® Fittings

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	MS Wall Mount			
	Roth MS Wall Mount, lige 16 x ½" connector x 16 mm	ea.	1/10	045667.189
	Roth MS Wall Mount, lige 20 x ½" connector x 20 mm	ea.	1/10	045667.239
	Roth MS Wall Mount 16 x ½" connector	ea.	1/10	045668.189
	Roth MS Wall Mount 20 x ½" connector	ea.	1/10	045668.239
	Roth MS Wall Mount 20 x ¾" connector	ea.	1/5	045668.246
	Roth MS Wall Mount 26 x ¾" connector	ea.	1/5	045668.341
	MS Repair Fittings			
	Roth MS Repair Fittings 16 mm	ea.	1	045669.016
	Roth MS Repair Fittings 20 mm	ea.	1	045669.020
	Roth MS Repair Fittings 26 mm	ea.	1	045669.026
	Roth MS Repair Fittings 32 mm	ea.	1	045669.032
	MS Press Ring			
	Roth MS Press Ring 16 mm	ea.	1	045669.816
	Roth MS Press Ring 20 mm	ea.	1	045669.820
	Roth MS Press Ring 26 mm	ea.	1	045669.825
	Roth MS Press Ring 32 mm	ea.	1	045669.832
	Roth MS Press Ring 40 mm	ea.	1	045669.840
	Roth MS Press Ring 50 mm	ea.	1	045669.850
	Roth MS Press Ring 63 mm	ea.	1	045669.863
	KU Elbow			
	Roth KU Elbow 90°, 16 x 16 mm	ea.	1/10	045670.016
	Roth KU Elbow 90°, 20 x 20 mm	ea.	1/10	045670.020
	Roth KU Elbow 90°, 26 x 26 mm	ea.	1/5	045670.026
	Roth KU Elbow 90°, 32 x 32 mm	ea.	1/5	045670.032
	Roth KU Elbow 90°, 40 x 40 mm	ea.	1/5	045670.040
	Roth KU Elbow 90°, 50 x 50 mm	ea.	1/5	045670.050
	Roth KU Elbow 45°, 26 x 26 mm	ea.	1/5	045673.026
	Roth KU Elbow 45°, 32 x 32 mm	ea.	1/5	045673.032
	Roth KU Elbow 45°, 40 x 40 mm	ea.	1/5	045673.040
	KU Tee			
	Roth KU Tee 16 x 16 x 16 mm	ea.	1/10	045680.016
	Roth KU Tee 20 x 20 x 20 mm	ea.	1/10	045680.020
	Roth KU Tee 26 x 26 x 26 mm	ea.	1/10	045680.026
	Roth KU Tee 32 x 32 x 32 mm	ea.	1/10	045680.032
	Roth KU Tee 40 x 40 x 40 mm	ea.	1/10	045680.040
	Roth KU Tee 50 x 50 x 50 mm	ea.	1/10	045680.050
	Roth KU Tee 16 x 20 x 16 mm	ea.	1/10	045680.194
	Roth KU Tee 20 x 16 x 16 mm	ea.	1/10	045680.240
	Roth KU Tee 20 x 16 x 20 mm	ea.	1/10	045680.241
	Roth KU Tee 20 x 20 x 16 mm	ea.	1/10	045680.242
	Roth KU Tee 20 x 26 x 20 mm	ea.	1/10	045680.248
	Roth KU Tee 20 x 32 x 20 mm	ea.	1/10	045680.251

Roth PressCheck® Fittings

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	KU Tee			
	Roth KU Tee 26 x 16 x 16 mm	ea.	1/10	045680.303
	Roth KU Tee 26 x 16 x 26 mm	ea.	1/10	045680.304
	Roth KU Tee 26 x 20 x 20 mm	ea.	1/10	045680.307
	Roth KU Tee 26 x 20 x 26 mm	ea.	1/10	045680.308
	Roth KU Tee 26 x 16 x 20 mm	ea.	1/10	045680.309
	Roth KU Tee 26 x 26 x 20 mm	ea.	1/10	045680.313
	Roth KU Tee 26 x 32 x 26 mm	ea.	1/10	045680.316
	Roth KU Tee 32 x 16 x 32 mm	ea.	1/10	045680.365
	Roth KU Tee 32 x 20 x 32 mm	ea.	1/10	045680.367
	Roth KU Tee 32 x 20 x 20 mm	ea.	1/10	045680.369
	Roth KU Tee 32 x 20 x 26 mm	ea.	1/10	045680.370
	Roth KU Tee 32 x 26 x 26 mm	ea.	1/10	045680.375
	Roth KU Tee 32 x 26 x 32 mm	ea.	1/10	045680.377
	Roth KU Tee 40 x 20 x 40 mm	ea.	1/10	045680.414
	Roth KU Tee 40 x 26 x 40 mm	ea.	1/10	045680.417
	Roth KU Tee 40 x 32 x 40 mm	ea.	1/10	045680.420
	Roth KU Tee 50 x 40 x 50 mm	ea.	1/10	045680.445
	KU Connector			
	Roth KU Straight-Through Joint 16 x 16 mm	ea.	1/10	045686.016
	Roth KU Straight-Through Joint 20 x 20 mm	ea.	1/10	045686.020
	Roth KU Straight-Through Joint 26 x 26 mm	ea.	1/10	045686.026
	Roth KU Straight-Through Joint 32 x 32 mm	ea.	1/10	045686.032
	Roth KU Straight-Through Joint 40 x 40 mm	ea.	1/10	045686.040
	Roth KU Straight-Through Joint 50 x 50 mm	ea.	1/10	045686.050
	Roth KU Straight-Through Joint 20 x 16 mm	ea.	1/10	045686.241
	Roth KU Straight-Through Joint 26 x 16 mm	ea.	1/10	045686.304
	Roth KU Straight-Through Joint 26 x 20 mm	ea.	1/10	045686.308
	Roth KU Straight-Through Joint 32 x 20 mm	ea.	1/10	045686.367
	Roth KU Straight-Through Joint 32 x 26 mm	ea.	1/10	045686.377
	Roth KU Straight-Through Joint 40 x 32 mm	ea.	1/10	045686.420
	Roth KU Straight-Through Joint 50 x 40 mm	ea.	1/10	045686.445
	Ball Valve			
	Roth Ball Valve 16 x ø10 mm tightening ring Used for transition from 16 mm Alu-LaserPlus pipe to mixers	ea.	1	045718.182
	Roth MS Transition 20 x 22 mm TT nipple Used for transition from Alu-LaserPlus to the TT manifold	ea.	1	045690.020

Radiator Con. & Manifold Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Radiator Connector For connecting radiators above the floor or in the wall. Consists of a brass connector piece with a support bushing, an O-ring, a separator ring, a nickel-plated 15 mm copper pipe with a length of 300 mm or 1,100 mm, and a press ring cast in high-grade steel.			
	Roth Radiator Connector Elbow 20 mm, L. 300 mm	ea.	1/2	404744.020
	Roth Radiator Connector Elbow 20 mm, L. 1100 mm	ea.	1/2	404744.050
	Roth Radiator Connector 20 mm, L 300 mm	ea.	1/2	404744.120
	Roth Radiator Connector 20 mm, L 1100 mm	ea.	1/2	404744.150
	Roth Connector Canister Used in conjunction with the Roth Radiator Connector Elbow or the Radiator connector Tee. Attached to the floor or the wall. Consists of a canister made of artificial material (polyamide) with a lid and a distance piece.			
	Roth Connector Canister 20 mm (for elbow)	set	1/2	404744.820
	Roth Connector Canister 20 mm	set	1/2	404744.850
	Roth Manifold EURO ¾" Manifold in non-dezincification brass. Centre distance between ramifications is 50 mm.			
	Roth Manifold EURO, 2 ramifications	ea.	1/25	046215.230
	Roth Manifold EURO, 3 ramifications	ea.	1/25	046216.230
	Roth Manifold EURO, 4 ramifications	ea.	1/25	046217.230
	Roth Manifold Couplings EURO ¾"			
	Roth Manifold Couplings 16 mm x ¾" EURO	ea.	1/50	401974.816
	Roth Manifold Couplings 20 mm x ¾" EURO	ea.	1/50	401974.820
	Roth Mounting Kit 3/4"			
	Roth Mounting Kit 3/4", for wall and box For TT and EURO manifold.	ea.	1/10	046269.206
	Roth Sealing Cap ¾" Gasket provided.	ea.	1/10	048300.106
	Roth Plug ¾"	ea.	1/10	046615.006
	Roth Alu-LaserPlus® Coupling Canisters			
	Roth Coupling Canister for wall½ x 16 mm	ea.	1/10	045726.216
	Roth Coupling Canister for drywall ½ x 16 mm	ea.	1/10	045726.246

Manifold Cabinets & Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Manifold Cabinets, Waterproof, Plastic **Roth Manifold Cabinets 400x550x96 mm int.** **Roth Manifold Cabinets 550x550x96 mm int.** **Roth Manifold Cabinets 800x550x96 mm int.** The Cabinets comes complete with pipe sleeve, bracket for manifold and drain. Pipe sleeve are pre-essembled.	 ea. ea. ea.	 1 1 1	 046297.504 046297.506 046297.508
	Roth frame and door for Manifold Cabinets, Plastic. Frame and door in steel **Roth Frame and door for 400 mm Cabinets** **Roth Frame and door for 550 mm Cabinets** **Roth Frame and door for 800 mm Cabinets**	 ea. ea. ea.	 1 1 1	 046297.514 046297.516 046297.518
	Roth Pipe Sleeve for Manifold Cabinets, Plastic **Roth Pipe Sleeve, 16-25 mm** **Roth Pipe Sleeve, 25-34 mm** **Roth Pipe Sleeve, 42 mm**	 ea. ea. ea.	 10 10 4	 046297.525 046297.534 046297.542
	Roth Manifold Cabinets, typ Mini. Waterproof, Plastic **Typ Mini 222x272x70 mm**	 ea.	 1	 046297.520
	Manifold for typ Mini. **Manifold 3/8" x ½"** without fittings	ea.	1	046297.603
	Manifold 3/8" x ½" with fittings and shut-off	ea.	1	046297.613
	Manifold 3/8" x ½" with fittings	ea.	1	046297.623

Mounting Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Fixation Bracket Used for 20, 25, 28, and 34 mm pipe-in-pipe to beams and joistings.	ea.	1/50/400	087289.234
	Roth Brackets System brackets that are hooked together independently from the dimension, and which are used for securing pipes-in-pipe in accordance with the installation instructions.			
	Roth Brackets 20 mm	ea.	1/50/500	087250.220
	Roth Brackets 25 mm	ea.	1/50/400	087250.225
	Roth Brackets 28 mm	ea.	1/50/400	087250.228
	Roth Brackets 34 mm	ea.	1/50/300	087250.234

Accessories

	Roth Coupling Kit M22x16 mm Used in conjunction with the Roth Pressure Test Plug.	ea.	1	087729.416
	Roth Test Pressure Plug M22 Used for pressure testing.	ea.	1	045099.122
	Roth Pressure Test Plug Used for pressure testing. Reusable.			
	Roth Pressure Test Plug 16 mm MS	ea.	1	045669.116
	Roth Pressure Test Plug 20 mm MS	ea.	1	045669.120
	Roth Pressure Test Plug 26 mm MS	ea.	1	045669.126
	Roth Pressure Test Plug 32 mm MS	ea.	1	045669.132
	Roth Pressure Test Plug 40 mm MS	ea.	1	045669.140
	Roth Pressure Test Plug 50 mm MS	ea.	1	045669.150
	Roth Pressure Test Plug 63 mm MS	ea.	1	045669.163
	Roth Pressure Test Plug			
	Roth Pressure Test Plug 16 mm MS	ea.	1	045669.216
	Roth Pressure Test Plug 20 mm MS	ea.	1	045669.220
	Roth Pressure Test Plug 26 mm MS	ea.	1	045669.226
	Roth Pressure Test Plug 32 mm MS	ea.	1	045669.232

Mounting Tools

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Electric Press Tools Electric press tools, 230 V, for pressing Roth MS and KU fittings To be supplemented with Roth press jaws or Roth press chains. Squeeze the press ring in order to create a tight and snug assembly between the press fittings and the Alu-LaserPlus® pipe.			
	Roth Electric Press Tools, 230 V	ea.	1	045728.023
	Roth Akku Press Tools Electric press tools, 9.6 V and 12 V, respectively, for pressing Roth MS and KU fittings. Includes Roth press jaws. Squeeze the press ring in order to create a tight and snug assembly between the press fittings and the Alu-LaserPlus® pipe.			
	Roth Akku-1, Press Tool, 9,6 V, without jaws	ea.	1	045729.100
	Roth Akku-1, Press Tool, 9,6 V incl. 16, 20, 26, 32 mm "small" jaws	ea.	1	045729.110
	Roth Akku-2, Press Tool, 12 V, without jaws	ea.	1	045729.200
	Roth Akku-2, Press Tool, 12 V incl. 16, 20, 26, 32 mm "large" jaws	ea.	1	045729.210
	Batteries to Akku-1 and Akku-2			
	Battery to Akku-1 9,6 Volt	ea.	1	045729.809
	Battery to Akku-2 12 Volt	ea.	1	045729.812
	Roth Press Jaws Fits Roth Electric Press Tools and Roth Akku Press Tools.			
	Large Press Jaws 16 mm, PressCheck®, til 045729.200 and 045728.023	ea.	1	045729.216
	Large Press Jaws 20 mm, PressCheck®, til 045729.200 and 045728.023	ea.	1	045729.220
	Large Press Jaws 26 mm, PressCheck®, til 045729.200 and 045728.023	ea.	1	045729.226
	Large Press Jaws 32 mm, PressCheck®, til 045729.200 and 045728.023	ea.	1	045729.232
	Small Press Jaws 16 mm, PressCheck®, til 045729.100	ea.	1	045729.116
	Small Press Jaws 20 mm, PressCheck®, til 045729.100	ea.	1	045729.120
	Small Press Jaws 26 mm, PressCheck®, til 045729.100	ea.	1	045729.126
	Small Press Jaws 32 mm, PressCheck®, til 045729.100	ea.	1	045729.132
	Case for Press Jaws, 16 - 32 mm	ea.	1	045728.232

Mounting Tools

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Basic Jaw and Press Chain			
	Roth Basic Jaw and Press Chain 40, 50 og 63 mm	ea.	1	045728.163
	The Roth Basic Jaw fits Roth Electric Tool 045728.023 and Roth Akku Press Tool 045729.200. To be used in conjunction with the Roth Press Chain.			
	Roth Press Chain 40 mm	ea.	1	045728.170
	Roth Press Chain 50 mm	ea.	1	045728.180
	Roth Press Chain 63 mm	ea.	1	045728.193
	The Roth Press Chain is only used in connection with the Roth Basic Jaw.			
	Case for Basic Jaws and Press Chain, 40 - 50 mm	ea.	1	045728.251
	Case for Basic Jaws and Press Chain, 40 - 63 mm	ea.	1	045728.263
	Roth Pipe Cutter			
	For cutting Roth Alu-LaserPlus® pipe, 14 - 63 mm. Includes a special wheel for Alu-LaserPlus®.			
	Roth Pipe Cutter	ea.	1	045728.363
	Spare wheel for Roth Pipe Cutter	ea.	1	045728.364
	Roth Calibration Tool			
	Calibration tool for Roth Alu-LaserPlus pipe			
	Roth Calibration Tool, arbors for 14, 16 og 20 mm	ea.	1	045728.520
	Roth Calibration Tool, arbors for 16 og 20 mm	ea.	1	045728.516
	Roth Calibration Tool, arbors for 26 og 32 mm	ea.	1	045728.532
	Roth Calibration Tool, arbors for 40 mm	ea.	1	045728.540
	Roth Calibration Tool, arbors for 50 mm	ea.	1	045728.551
	Roth Calibration Tool, arbors for 63 mm	ea.	1	045728.563
	Roth Calibration tool set, 14-32 mm	ea.	1	045728.432
	Calibration tool for Roth Alu-LaserPlus pipe. Can be used with handle or electric tools			
	Roth Bending Spring - external			
	Used for external bending of Roth Alu-LaserPlus® pipes.			
	Roth Bending Spring, ext. 16 mm x 350 mm	ea.	1	045728.616
	Roth Bending Spring, ext. 20 mm x 400 mm	ea.	1	045728.620
	Roth Roth Bending Spring - internal			
	Used for internal bending of Roth Alu-LaserPlus® pipes.			
	Roth Bending Spring, int. 16 mm x 1600 mm	ea.	1	045728.646
	Roth Bending Spring, int. 20 mm x 1600 mm	ea.	1	045728.650
	Roth Bending Spring, int. 26 mm x 1600 mm	ea.	1	045728.647

Own Notes

Roth Alu-LaserPlus® Pipe System

Planning and Project Design

... living full of energy!

Roth Alu-LaserPlus® Pipe System

... a modern installation technique for water and heating systems

The Alu-LaserPlus® pipe system is state of the art when it comes to installation technique. Given the rising demand for modern assemblies, Roth has developed this new system that is based on the best and most modern materials and assembly techniques.
The system is based on an Alu-LaserPlus® pipe, a 5-layer pipe that combines the best characteristics from the PE-pipe with the best metal pipe characteristics.
The fittings for the system are based on the known radial press technique, which provides a secure and durable assembly. The fittings are made of brass and the artificial material PPSU. PressCheck® is leaky as long as it is not pressed.
The Roth Alu-LaserPlus® pipe system contains a variety of components that simplify and enhance the pipe system (see separate Product Range).

Physical characteristics for Alu-LaserPlus® pipes.

Characteristic	Measured value	Norm
Density	0.95 g/cm3	DIN 53479
Thermal conductivity capacity	0.43 W/K m	DIN 52612
Coefficient of linear expansion	0.3 x 10-4 K-1	DIN 52328
Diffusion tight	DIN 4726	
Minimum bending radius at 20o C (68o F).	5 x diameter	
Relaxation	None	
Insulation value on Alu-LaserPlus insulation 0,040 W/m K (Δt 40°)		

The Alu-LaserPlus® pipe is a quality product that has been developed for water and heating systems. The pipe is made up of 5 layers. The inner layer features a thick-walled PE-pipe, an adhesive, laser-welded alu-coating, and adhesive; the outer layer features a protective PE-layer.
Since the inner pipe is thick-walled, the pipes are able to withstand their pressure and temperature rating without help from the alu-coating.
The production is ISO 9001 compliant, and it is monitored by a variety of independent testing institutions. One interesting feature is the so-called time constant curve, which shows how the pipe behaves during its usable life. The Alu-LaserPlus® pipe shows only a minimally falling value, including during long-term testing at high temperatures. The curve does not show any abrupt deviations or rapidly falling values. An Alu-LaserPlus® pipe has a safety factor that extends well beyond the normal requirement. Ongoing testing is perforwith pursuant to DIN 16892

The Roth Alu-LaserPlus® pipe has several advantages:

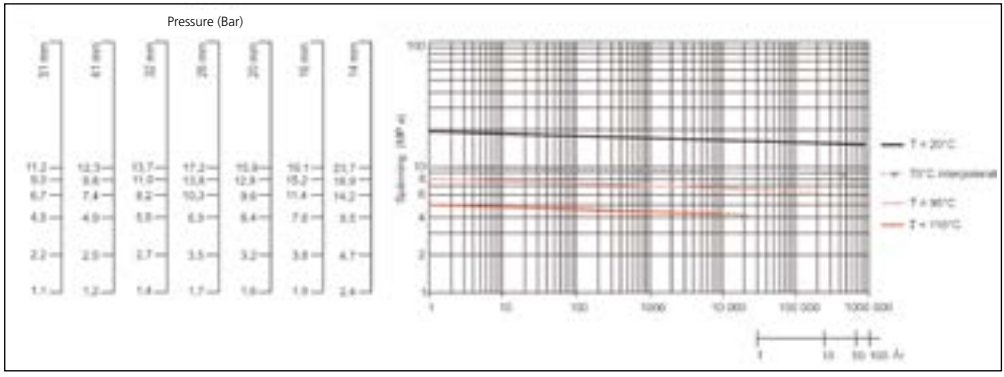
- Long durability
- Great aging resistance (slow cor rosive effect on pipe)
- For domestic water usage, the al lowed operating temperature is 70° C/158o F. (95o C./203° F. short-term) at an operating pressure of 10 bar (145 PSI)
- Low loss of pressure, no deposits, and no galvanic or chemical corrosion
- Ability to withstand "construction site treatment"
- Minimal linear expansion
- Deformation resistant.
- Great impact resistance, including during cold conditions
- Great flexibility that makes it easy to work with, including during cold conditions
- Diffusion tight
- VA (Water and Drainage) approved 1.14/19173 for 70° C (158° F) at 10 bar (145 PSI).

With regards to domestic water systems, special mention should be made that Roth Alu-LaserPlus® pipes and fittings are resistant to:

- Drinking water content, pursuant to DIN 2000
- Disinfectants and cleaning agents, pursuant to DVGW W 291 and DNI 2000
- Corrosion protectants, pursuant to DIN 1988 item 4
- Common building materials such as mortar, cement, and plaster
- Flow optimizers, pursuant to DIN 8075, Addendum 1

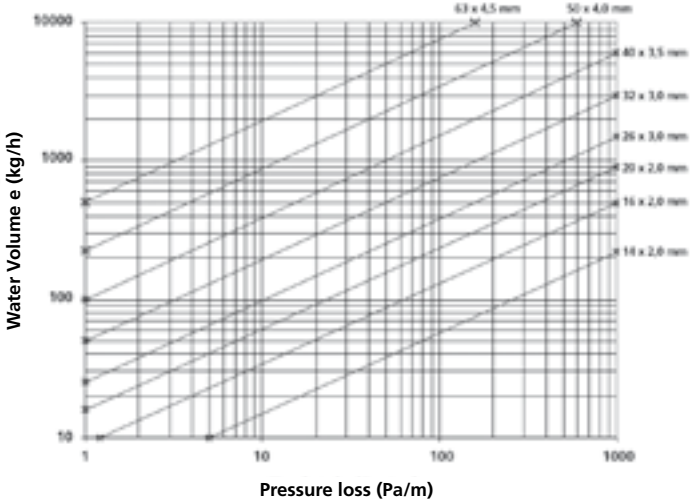
Roth Alu-LaserPlus® pipes and Press-Check® fittings need protection against oil, grease, gas leaks, and solvents.

Time constant for Roth Alu-LaserPlus® pipes (internal pressure tests)



Roth Alu-LaserPlus® Pipe System

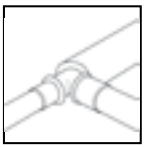
Pressure loss diagram for Roth Alu-LaserPlus® pipes



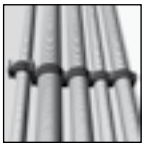
The Roth Alu-LaserPlus® pipe is a strong pipe by itself as long as the 10 bar (145 PSI) / 70° (158° F.) operating area is adhered to. In addition, there are some rules and circumstances that you need to be aware of and adhere to when working with Alu-LaserPlus® pipes.

Always cut the pipe with a Roth Pipe Cutter intended for Alu-LaserPlus® pipes. The cut must be at a straight angle; any uneven cuts may cause the coupling to leak.
Be aware that the pipe surface must be smooth and undamaged.

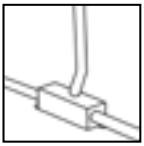
Before inserting the pipe into the coupling, it must be calibrated and trimwith using a Roth Calibration Tool. The pipe can then be attached to the coupling without the use of grease. Press the pipe into the coupling until it stops, and until the pipe passes the control holes on the press ring.



Only use fittings approved for use with Roth Alu-LaserPlus pipes. Always follow the manufacturer's installation guide for the individual coupling. Avoid embedding assemblies directly in walls or floors; make sure to protect them using insulation, tape, etc. PressCheck fittings are leaky until fully pressed. See tightness testing.



The pipe must be fastened to the structure using Roth pipe brackets. Using other types of brackets may result in the pipe/casing pipe becoming crushed or damaged. This also applies when running pipes under partitions, etc.

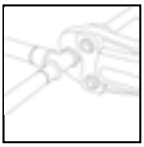


After installing the Alu-LaserPlus® pipes, it is important to protect the exposed pipes against the ultraviolet rays of the sun. By the radiators, this is done by using a Roth Radiator connector elbow or tee with its accompanying canister when running pipes up to the radiator.

Avoid placing the Alu-LaserPlus® pipe into contact with products that contain solvents.

Do not expose the system to gas leaks and highly corrosive environments.

For the assembly of the Alu-LaserPlus® pipe, only Roth System Components or Roth-approved components be used. Especially for use in water systems: ONLY use Roth System Components; it is a matter of system approval.



When producing press assemblies, only use Roth Press Tools with their accompanying press jaws/chains or press tools of a different Roth-approved brand.
If the wrong tools are used, the system and any consequential loss will not be covered by warranty.

Planning

one pipe for both water and heating.

General system information.

The Roth Alu-LaserPlus® pipe system is VA (Water and Drainage) approved as a system. In terms of water systems, this means that Roth fittings and pipes must be used together, and that they cannot be combined with other brands. The Roth Alu-LaserPlus® pipe system must be produced as a visible water system. As far as usage for heating systems is concerned, you are free to combine with other systems; however, you must ensure that fittings and pipes fit together dimensionally. The system can be used for both visible and invisible installation. In case of any doubts, contact Roth Nordic A/S.

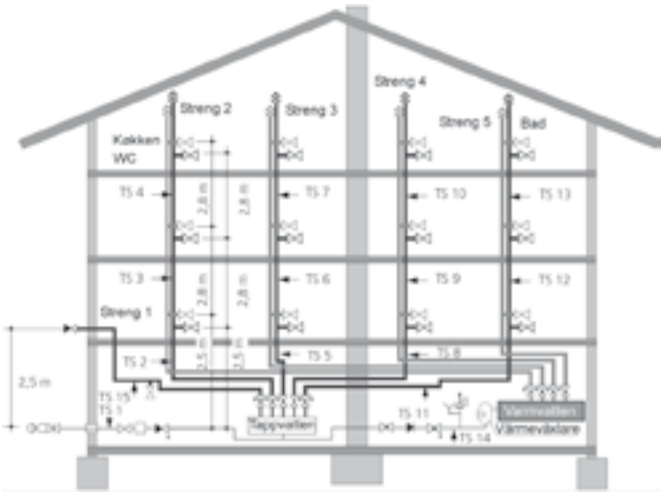
When installing the Alu-LaserPlus® system, always adhere to the requirements in DS 439 for water systems and DS 469 for heating systems with water as the heat conductor.

Planning Alu-LaserPlus® water installations.

The combined characteristics of the Alu-LaserPlus® pipe makes it very suitable for use in water systems. The pipe can be used directly for the production of a fully visible/accessible system from basement to rooftop.

Since it is a pipe with characteristics that resemble those of a metal pipe, it is necessary to take measures regarding attachment and length expansion. The drawings and the table on the right describe the goals that the system needs to fulfill.

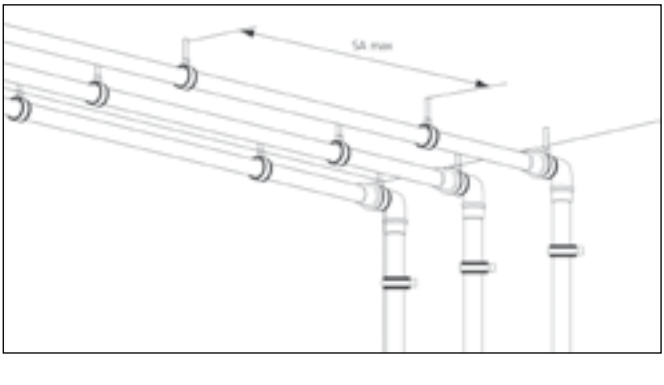
Principle of Alu-LaserPlus® pipes in a water installation



Max distance between fixation of Alu-LaserPlus® pipes

Roth Alu-LaserPlus® pipes							
Dimensions	16 mm	20 mm	26 mm	32 mm	41 mm	51 mm	63 mm
SA (cm)	100	100	150	150	180	180	180

Ascending placement of Alu-LaserPlus® pipes as basement pipe and riser

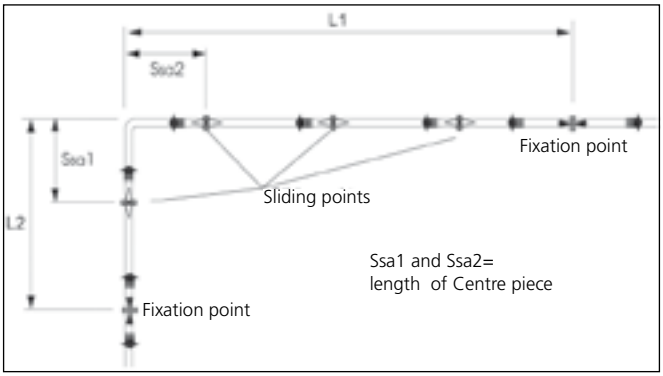


Roth Alu-LaserPlus® Pipe System

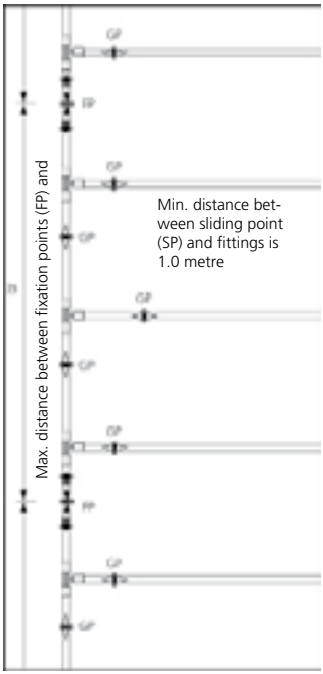
Fixation of Alu-LaserPlus® pipes.

When properly used, fixation and sliding points can work as absorption of length expansion on the pipes.
In any circumstance, laying the pipes in a Z or a U pattern using the proper centre piece will serve as a compensatory element on the conduit.
The use of fixation points will depend on the line placement. In the case of straight conduits, the fixation point must be at the centre of the conduit, and any additional points must be shaped as sliding points.
Fixation points should be placed directly against pipe fittings. In the case of very long, straight pipe sections, it may be necessary to use real compensators. In the case of pipe sections in excess of 15 meters (49.2 feet), a heavy-built jig should be used.

Fixation of Alu-LaserPlus® pipes as basement pipe and riser



Placement of fixation points/ sliding points



Calculation of centre piece:

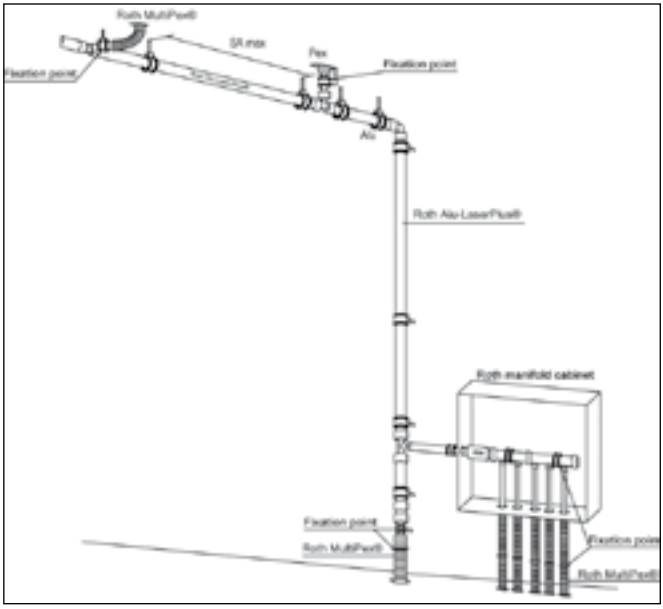
$$S_{sa} = c \times \sqrt{d_a \times \Delta L}$$

:

S_{sa} = Centre piece lgth (mm).
c = 33 (dimension-less constant).
d_a = Exterior diameter Ø on Alu-Laser Plus® pipe
ΔL = Length expansion (mm).

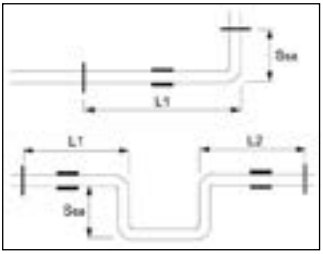
Example:
L_1 = 8 m
L_2 = 8 m
d_a = 32 mm
(Ø32mm Alu-LaserPlus® pipe)
$\Delta\vartheta$ = 40 K
c = 33
ΔL_1 = 9,6 mm
ΔL_2 = 9,6 mm

S_{sa} = $33 \times \sqrt{32\ mm \times 9{,}6\ mm}$ equal
Lgth of centre piece = 578,4 mm



Roth Alu-LaserPlus® Pipe System

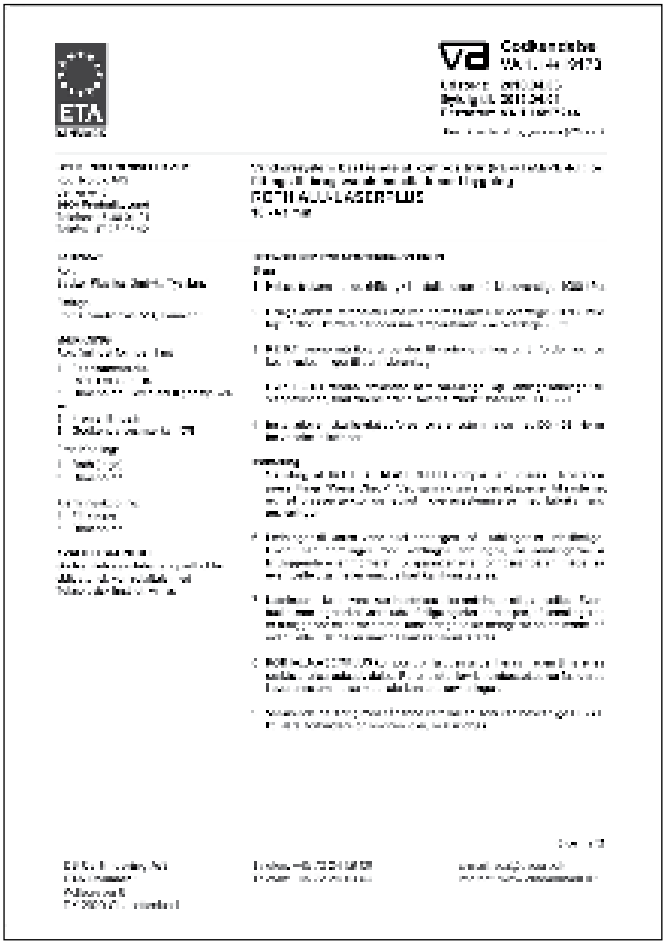
Dimensioning of expansion curve for Alu-LaserPlus® pipes



Water volume and weight of Alu-LaserPlus® pipes

Dimension [mm]	Pipe weight [gr/m]	Water volume [l/m]	Total weight [gr/m]
16	126	0,113	256
20	166	0,201	376
26	278	0,314	593
32	348	0,531	883
40	528	0,855	614
50	738	1,385	2123
63	1090	2,289	3380

VA Approval


ETA

ROTH ALU-LASERPLUS

Temperature limits

Alu-LaserPlus® pipes and fittings are capable of handling the tough environment on the construction site. When working with the system, the surrounding temperatures must be between -20 og +40 °C. Do not use Roth press machines with an ambient temperature below -10 °C. The system can be used for operating temperatures as low as -20 °C.

Systems with Alu-LaserPlus® and Pex pipes

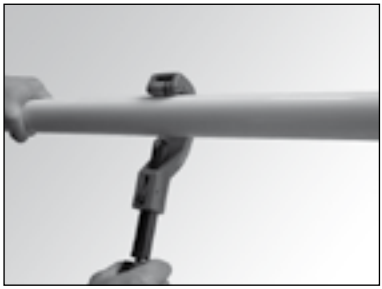
For systems with a combination of Alu-LaserPlus® pipes and PEX pipes, it is particularly important to be aware of the relative wide expansion of the PEX pipes and the effect of this expansion on the Alu-LaserPlus installation. When transferring from PEX to Alu-LaserPlus, the PEX pipes need to be fixated in such a way that there is no undesirable strain on the Alu-LaserPlus system. This applies to all ramifications, including ramifications to PEX manifolds.

Fire requirements

Where the Alu-LaserPlus system is used in structures covered by fire requirements, the regulations from Danish Institute of Fire and Security Technology (DBI) should be observed closely. In multi-storey buildings with dwellings, fire protection may usually be omitted for pipe dimensions up to 32 mm, but please refer to DBI guideline 31.
Where the Alu-LaserPlus system is used as feeding pipe for hose wheels, the pipes must be insulated to ensure that water supply for fire fighting may be upheld for at least 30 minutes. Please refer to DBI guideline 15.

Roth Alu-LaserPlus® Pipe System, mounting instructions

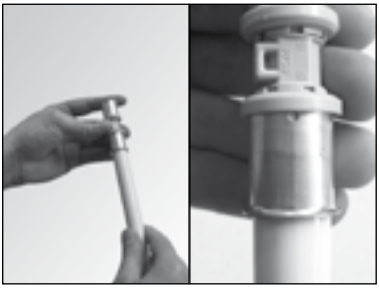
Shorten the pipe using a Roth pipe cutter (16-63 mm) or Roth pipe shears (16-26 mm). The cut must be at a right angle and the pipe surface must be undamaged.



Trim and calibrate the pipe using a Roth calibration tool so that the O ring of PressCheck® fittings is not damaged during assembly.

Roth Alu-LaserPlus® Pipe System, mounting instructions

Remove any cuttings from the pipe..



Push the pipe into PressCheck® fittings. Check that the pipe is pushed fully home.

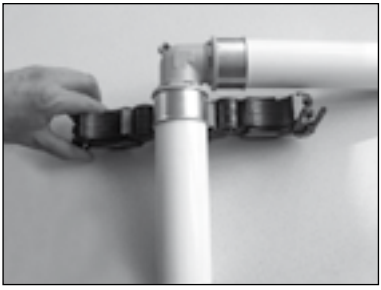
Place the press jaw (for 16-32 mm) on the press ring between the plastic part and the bead.

Roth Alu-LaserPlus® Pipe System, mounting instructions

Start the press machine by activating the start button and remove the machine when pressing is complete.

Use Roth press chains to press up to 40, 50 and 63 mm. Open the press chain using the spring-loaded bolt.

Place the press chain on the PressCheck® press ring.



Roth Alu-LaserPlus® Pipe System, mounting instructions

Close the press chain around the press ring.

Place the basic jaw in the press chain and activate the start button. Remove the machine and the basic jaw once pressing is complete.

Roth Alu-LaserPlus® Pipe System

Designing Alu-LaserPlus® water systems.

Water systems must be designed and dimensioned according to the Danish Society of Engineers standard for water systems, DS 439.
Systems can be dimensioned by performing either a full calculation or a simplified calculation.
A full calculation requires excellent dimensioning insight and should be left to an engineer.
The simplified calculation is somewhat easier and may be used for dwellings and office buildings, etc., under certain conditions, cf. item 2.4 of the standard.
For the purpose of facilitating dimensioning, Roth has prepared some tables that make it easy and safe to dimension a system according to the simplified calculation method.

Example of dimensioning:

To be able to dimension our feeder pipes, we need to know the system's available pressure loss.
The pressure loss at the rough bore location is usually disclosed by the water company. In our example, it is stated at 350 kPa; the service pipe is 15 m long; the height between the supply point (1.2 m down) and the most dangerous point (2.5 m up) is 3.7 m; the fitting is in pressure group 150; there is a bath tub on the manifold pipe; and the length of the feeder pipe is 10 m with an overall water flow of 0.6 l/s.

We can now calculate what is available for the rest of the system:

Supply point pressure	350 kPa
Height to most dangerous point (m x 10)	-37 kPa
Available pressure	313 kPa
Pressure loss in socket (15 m, 32 mm PEM)	-50 kPa
Pressure loss in coupling pipe	-50 kPa
Pressure loss in fitting (x 0.5)	-75 kPa
Pressure loss for use in feeder pipe	138 kPa

Go to Table 3a under 100 kPa and find the pipe dimension where the length of the feeder pipe is greater than or equal to 10 m. In this case, a 20 mm Alu-LaserPlus® pipe is selected.

Table 1, Service Pipes

kPa	mWc	Qs	Max m. PEL pipe	
		l / s	32 mm	40 mm
50	5	0,51	15	42
100	10	0,51	74	215

The table shows how many meters of a given dimension of PEL/PEM pipe can be laid without the pressure loss on this section exceeding 50 kPa and 100 kPa, respectively.

Table 2, Coupling Pipes

Water flow qf (l/s)	Tap location	16 mm Max m.
0,1	Sink, toilet	32,0 (12,5)
0,2	Other	9,2
0,3	Bath tub	4,1

The table indicates the maximum length of a coupling pipe in meters in order for the pressure loss not to exceed 50 kPa. The figures in parentheses should apply to warm water systems to prevent the wait time from exceeding 10 sec.

Roth Alu-LaserPlus® Pipe System

Table 3, Feeder Pipes
(without bathtub)

Pt		Total Σ qf	Dimension			
kPa	mWs	(l / s)	15	18	22	28
50	5	0,2	4,3	18	50	148
		0,3	2,3	11	31	93
		0,4	1,8	9	27	81
		0,6	1,3	7	22	67
		0,8	1,0	6	19	57
100	10	0,2	9,9	37	102	297
		0,3	5,6	23	63	187
		0,4	4,7	20	55	164
		0,6	3,7	16	46	136
		0,8	3,0	13	39	115
150	15	0,2	15,0	56	153	447
		0,3	8,9	34	96	281
		0,4	7,6	30	84	247
		0,6	6,1	25	70	206
		0,8	5,0	21	59	174
200	20	0,2	20,3	75	204	
		0,3	12,2	47	128	
		0,4	10,5	41	112	
		0,6	8,6	33	93	
		0,8	7,0	28	78	

The table indicates which dimension to choose when Pt and pipe length are known. When calculating, Σ qf is converted to qd.

Table 3a, Feeder Pipes
(with bathtub)

Pt		Total Σ qf	Dimension			
kPa	mWs	(l / s)	15	18	22	28
50	5	0,3	1,5	8	24	72
		0,4	0,8	5	17	52
		0,6	0,4	4	14	42
		0,8	0,2	4	12	37
100	10	0,3	4,2	17	49	147
		0,4	2,7	12	35	106
		0,6	2,0	10	29	87
		0,8	1,6	9	25	77
150	15	0,3	6,9	27	75	221
		0,4	4,6	19	54	160
		0,6	3,6	15	44	132
		0,8	3,0	13	38	116
200	20	0,3	9,6	37	101	296
		0,4	6,5	26	72	214
		0,6	5,2	21	59	177
		0,8	4,4	18	52	156

The table indicates which dimension to choose when Pt and pipe length are known.

Roth Alu-LaserPlus® Pipe System

Circulation of hot domestic water

When planning the water system, a decision needs to be made whether or not to establish circulation. As prescribed by the water standard, the maximum wait time should not exceed 10 sec. For this reason, it is necessary to calculate the system wait time.
The wait time is calculated by first measuring the pipe that leads from the water heater to the manifold pipe. The length is entered in the diagram, and the wait time can be read from the pipe dimension in question. Next, the pipe that runs from the manifold pipe to the farthest tap location is measured, and again the wait time is read from the diagram. The two results are then added together to obtain the total wait time. If the wait time exceeds 10 sec., circulation should be created.
When creating circulation, a circulation pump needs to be installed to create the circulation. For this purpose a Vortex circulation pump is utilized. This pump has certain advantages such as low performance and a short built-in length.

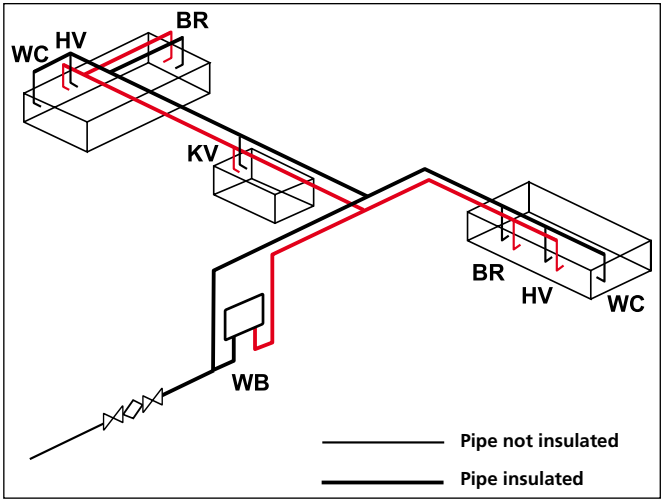
Insulation of water systems

According to the DS 452 insulation standard, all sections of feeder pipes must be fully insulated. This applies to both cold and hot water.
Coupling pipes must be insulated throughout the section located outside the room where the fitting is placed.

Wait times for Alu-LaserPlus® pipes

Volume l / s	Pipe dimension		
	26 mm s / m	20 mm s / m	16 mm s / m
0,1	3,14	2,01	1,14
0,2	1,57	1,00	0,58
0,3	1,04	0,67	0,38
0,4	0,78	0,50	0,29
0,5	0,63	0,40	0,23
0,6	0,52	0,33	
0,7	0,45	0,29	
0,8	0,39	0,25	
0,9	0,35		
1,0	0,31		
1,1	0,28		
1,2	0,26		

Example of insulation of water systems.



Roth Alu-LaserPlus® Pipe System

Definition of insulation classes

	Class 0	Class 1	Class 2	Class 3	Class 4
Application	Rarely used installations or e.g. radiator plug	Central heating pipes in heated rooms.	Central heating pipes in unheated rooms and domestic water pipes with an operating time of less than 60 h/week	Domestic water pipes with an operating time of more than 60 h/week	Mains

Insulation thickness requirements in mm at an ambient temperature of 20°C, and medium temperature up to 60°C, see also DS 452

Pipe dia. in mm	Insulation class			
	Class 1	Class 2	Class 3	Class 4
16	20	20	20	30
20	20	20	30	30
26	20	20	30	40
32	20	30	30	40
40	20	30	40	50
50	30	40	50	60
63	30	40	50	60

Insulation as Rockwool, universal pipe section

Tightness test

Roth PressCheck® fittings are leaky within a particular specified pressure until pressed. This ensures that any non-pressed fittings are detected, and that a system is not left to itself without having pressed all the PressCheck® assemblies. For this reason, before the pressure test itself, a pressure test of the system should be perforwith according to the following pressure intervals:
16-32 mm Alu-LaserPlus® system is pressure tested at 0.8-60 kPa.
40-63 mm Alu-LaserPlus® system is pressure tested at 0.8-15 kPa.
If the system consists of PressCheck® fittings from both categories, pressure testing should take place at a range of 0.8-15 kPa.

Pressure test

Before putting into use a water system built with Roth Alu-LaserPlus® pipe-in-pipe, the system should always be tested for leaks.
The test should be perforwith with water, and the testing pressure should be 1.5 times the estimated operating pressure for a duration of 2 hours.
After the pressure is turned on, the pressure may rise. This is perfectly normal. The pressure should be monitored throughout the tightness test.
Do not use gas leaks for pressure testing and error detection.
Be aware of the risk of subsequent freezing. Documentation for the tightness test must be made available.

Flushing the system

Roth Alu-LaserPlus® systems contaminate less than other types of systems since no cutting, packing or flux agents for joining pipes and fittings are used.
A full system flush must take place in accordance with the requirements for water systems as set forth in the DS 439 standard.

Roth Alu-LaserPlus® Pipe System

Planning of Alu-LaserPlus® heating systems.

The combined characteristics of the Alu-LaserPlus® pipe make it very suitable for use in visible as well as hidden heating systems. Since it is a pipe with characteristics that resemble those of a metal pipe, it is necessary to take precautions with regards to attachment and length expansion. Please refer to the precautions under the water system section on pages 5 and 6.

The system can be used for traditional, visible pipe laying with basement pipes and risers; or it can be installed as a hidden system, either as a dual-string system according to the manifold principle or as a single-string, traditional system.

The Alu-LaserPlus® pipe is available as an exposed pipe, a pipe in a casing pipe, and a pipe with insulation. The two types -- pip-in-pipe and pipe with insulation -- are suitable for embedding in concrete. The casing pipe also serves as insulation; however, it does not provide the ability to replace the inner pipe as in the case of a PEX pipe-in-pipe.

It is a good idea to place the manifold pipe in a central location between the radiators so the sections are as short as possible. In the case of a very large system, or if zone divisions are desired, it is possible to set up manifolds in different parts of the building.

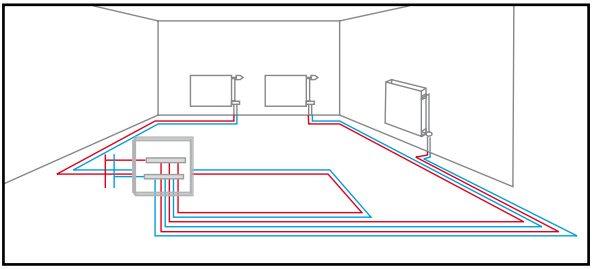
For example, Alu-LaserPlus® pipes-in-pipe are installed from the manifold and out to each individual radiator, allowing for a water damage proof system. However, this is not a standard requirement.

When the pipes are rolled out, they need to be placed along the walls of the building with the smoothest bends possible and with a maximum of three sharp 90o elbows on a single stretch. In structures where the pipes are not embedded, such as below a wooden floor, it is important to place the casing pipes in a fixed position at each change of direction; otherwise, the casing pipe will work as a spring in the event that the Alu-LaserPlus® pipe is replaced. In order to absorb pipe movements caused by heating and cooling, it is very important to lay the pipe properly (see the drawing "How to Lay an Alu-LaserPlus® Pipe").
When fastening a pipe-in-pipe, either a pipe clamp or a pipe bracket must be used.

The use of nails, perforated strip, or the like will cause the pipe/casing pipe to be flattened.

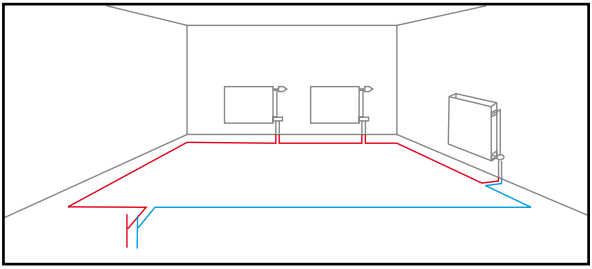
One place to finish the installation is by the radiator, using a Roth Radiator connector elbow or tee with its corresponding connector box. If the end of the Alu-LaserPlus® pipe is visible above the floor, it needs to be protected against ultraviolet solar rays and mechanical overload . For this purpose, a Roth Rosette with a protecting tube or a Roth Radiator connector elbow with a connector box is used.

As a dual-string system



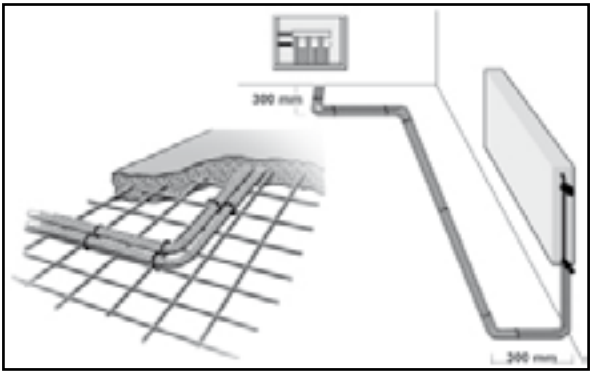
Installation of the Alu-LaserPlus® system as a dual-string system according to the manifold pipe principle. The pipe is led from a centrally located manifold pipe out to each individual radiator, and then back again.

As a single-string system



Installation of the Alu-LaserPlus® system as a single-string system where the pipe is led from radiator to radiator and is connected through single-string valve systems. The system can also be installed as a dual-string system by using dual-string valves

Laying of Alu-LaserPlus® pipes.



Two 90° bends are installed by the manifold and the radiator, respectively. The elbows must meet the minimum bend radius of 5 x the outside pipe diameter There must be a minimum distance of 300 mm between the two elbows. On straight pipe sections, the pipes must be fastened every meter at a minimum.

Roth Alu-LaserPlus® Pipe System

Designing Alu-LaserPlus® heating systems

Heating systems must be designed and dimensioned according to DS 469, the Danish Society of Engineers standard for heating systems using water as the heat conductor. Systems can be dimensioned by performing either a full calculation or a simplified calculation. A full calculation requires dimensioning insight and should be left to an engineer.

In order to facilitate dimensioning for simplified calculation, Roth has created schedules (for dual-string systems) where pipe length and the heating needs for the room can be used as factors for determining the proper dimension.

Two schedules have been created: one for feeder pipes and one for radiator outlets.

Remember, it is the calculated heat loss for the room that needs to be used, not the radiator watts!

This is how it is done:

1. Select a schedule according to the pipe type (feeder or radiator outlet).
2. Enter the performance category "Watts" on the horizontal line.
3. Proceed vertically to the length that is at least equal to the current length and read off the dimension on the left.

NOTE! Only the one-way stretch needs to be measured; the return stretch is included in the schedules.

Insulation of pipes in heating systems

All Alu-LaserPlus installations must be insulated according to DS 452 standard.

Flushing the system

Roth Alu-LaserPlus® systems contaminate less than other types of systems since no cutting, packing or flux agents are used for joining pipes and fittings.

A full system flush must take place in accordance with the requirements for heating systems with water as the heat conductor as set forth in the DS 469 standard.

Tightness test

Roth PressCheck® fittings are leaky within a particular specified pressure until pressed. This ensures that any non-pressed fittings are detected, and that a system is not left to itself without having pressed all PressCheck® assemblies.
For this reason, before the pressure test itself, a pressure test of the system should be perforwith according to the following pressure intervals:

16-32 mm Alu-LaserPlus® system is pressure tested at 0.8-60 kPa.

40-63 mm Alu-LaserPlus® system is pressure tested at 0.8-15 kPa.

If the system consists of PressCheck® fittings from both categories, pressure testing should take place at a range of 0.8-15 kPa.

Pressure test

IBefore putting into use a water system built with Roth Alu-LaserPlus® pipe-in-pipe, the system should always be tested for leaks.

The test should be perforwith with water, and the testing pressure should be 1.5 times the estimated operating pressure for a duration of 2 hours.

After the pressure is turned on, the pressure may rise. This is perfectly normal. The pressure should be monitored throughout the tightness test.

Do not use gas leaks for pressure testing and error detection.

Be aware of the risk of subsequent freezing. Documentation for the tightness test must be made available.

Table for feeder pipes (35° C / 95o F. cooling)
The numbers in the fields indicate the max length in meters.

Perform (Watts)	2000	3000	4000	5000	6000	7000	8000	9000	10000
(m) 16 mm	67,6	32,8	20,0	13,1	9,6	7,1	5,7	4,4	3,9
(m) 20 mm					78,3	62,6	47,0	37,6	31,3
(m) 26 mm						79,3	65,7	48,9	45,1

Radiator outlet schedule (35° C cooling)
The numbers in the fields indicate the max length in meters.

Perform (Watt)	500	1000	1500	2000	2500	3000	3500	4000
(m) 16 mm				67,6	43,4	32,8	24,2	20,0

Preconditions for preparing the schedules:

Component selection:

Pump: Grundfos UPS 25-40/1.4mWc - 1 m3/h
Valves: dual-string, as TA or Danfoss dual-string
System: dual-string according to the manifold pipe principle
Boiler: Unit with built-in pump

Fixed pressure loss:

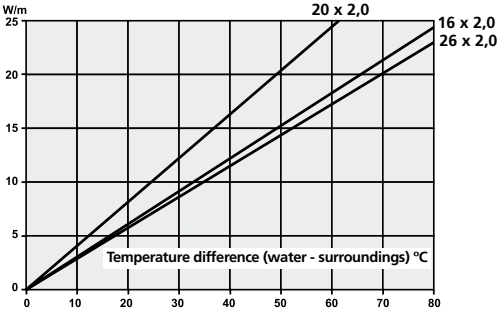
Valves: 2.5 kPa (max. 3,000 Watts)
Boiler: 1.0 kPa (max. 10,000 Watts)
Fittings: 0.1 kPa (incl. manifold)
Radiator: 0.5 kPa (max. 3,000 Watts)

Roth Alu-LaserPlus® Pipe System

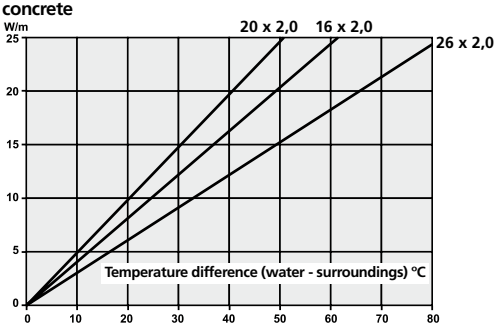
Heat emission from Alu-LaserPlus® pipes.

Please refer to DS 452 for requirements and standards. The Alu-LaserPlus® pipe has a good insulation capacity against heat emission and condensation when installing pipes-in-pipe as well as insulated pipes.

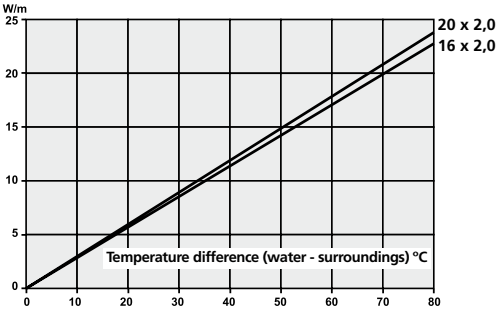
Roth Alu-LaserPlus® pipe-in-pipe, free-standing



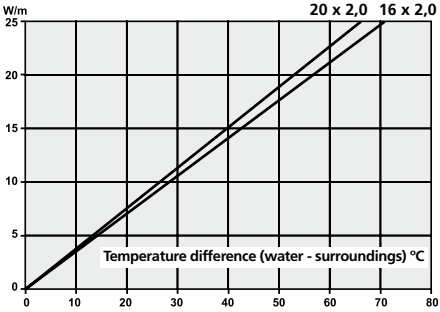
Roth Alu-LaserPlus® pipe-in-pipe, embedded in 50 mm concrete



Roth Alu-LaserPlus® pipe, insulated, free-standing



Roth Alu-LaserPlus® pipe, insulated, embedded in 50 mm concrete



NOTE! When laying pipes free-standing without casing pipe compared with free-standing pipe-in-pipe, heat emission increases by approx. 30%

Roth Alu-LaserPlus® Pipe System

Press couplings for Alu-LaserPlus®

The Alu-LaserPlus® system features a complete program of press couplings made out of the most modern and corrosion resistant materials: Top-quality brass or PPSU, a high-tech artificial material. This complete program stands out because of a series of advantages:

- Corrosion resistant
- High pressure and temperature resistant, good chemical and thermal characteristics (hydrolysis constancy)
- Hygienically suitable everywhere
- Considerably tight press assembly
- Lower water content
- Highly secure with diffusion tight Alu-LaserPlus® pipes.
- Smooth inner surfaces mean no deposits
- Practical, easy to install, and priced right

The press couplings are assembled along with the pipe according to the radial press method, which consists of using Roth special press tools to press an external press ring made of stainless steel. This process causes the press ring to be deforwith and to press the pipe against a fixed support bushing equipped with EPDM O-rings. This type of assembly is fast and easy to install, and it ensures a tight and durable assembly for many years to come.

Roth system components for domestic water and radiator systems are developed with a fixed support bushing on the actual body of the fitting, so all you have to do is simply slide the Roth Alu-LaserPlus® pipe over it.

The stainless-steel press ring is fixed to the fitting and equipped with control holes, making it easy to determine whether the pipe is pressed properly into the bottom of the fittings.

Brass press couplings

Brass is a remarkable material for use in domestic water systems. Brass is highly resistant to all kinds of corrosion, whether it be salt types, etc., that are found in domestic water, stress corrosion, and corrosion fatigue.

The product range consists of a full selection with all the usual pipe fittings and threads in the following dimensions: 16, 20, 26, 32, 40, 50, and 63 mm. The product range also features special fittings for use in heating systems.

Characteristics for fitting alloys:

- Material: brass resistant to dezincification, Category A, pursuant to ISO 6509
- Characteristics: DIN 50930 compliant
- Hardness: 80 HB
- Ultimate stress: 280 N/mm²
- Elongation after fracture: 10%
- Yield point Rp 0.2: 120 N/mm²

PPSU press couplings.

PPSU is a relatively new artificial material, which previously was only used in areas such as the space industry. PPSU has even greater resistance to all kinds of corrosion, whether it be salt types, etc., that are found in domestic water, stress corrosion, and corrosion fatigue.

The product range consists of a full selection with the following dimensions: 16, 20, 26, 32, 40, and 50 mm. All the normal pipe fittings without thread are available here.

Characteristics for fitting alloys:

- Material: Polyphensylsulfone (PPSU)
- Stress yield during pressure experiments at 23o C (73.4° F.): 99 Mpa
- Linear expansion coefficient: 5.6 x 10-5 m/mK
- Impact strength according to Izod at 23° C (73.4° F.): 694 J/m

Roth SnowFlex® Pipe System

Product Range

... living full of energy!

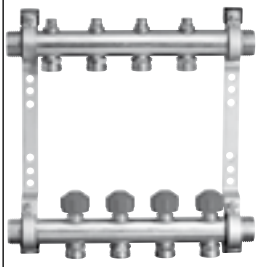
SnowFlex® pipes, accessories, and regulation

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth SnowFlex® pipe Polyethylene pipe without diffusion lock. Used in connection with ground heating systems. Max operating temp. 50° C. (122° F.) at 7 bar (101.5 PSI). Max short-term temp. 70° C. (158° F.) at 6 bar (87 PSI). Max operating pressure 10 bar (145 PSI) at 20o C. (68o F.) **Roth SnowFlex® pipe 25 x 2,3 mm á 220 m** **Roth SnowFlex® pipe 25 x 2,3 mm á 1020 m**	 roll roll	 1 1	 087236.265 087236.285
	Roth Mounting Rail Mounting rail for installation with 25 mm SnowFlex® pipe. The rail is fastened against insulation using Roth Fastening Clips. Total overall height: 35 mm Pipe distance: 250 mm Length: 2 m **Roth Fastening Clips (available as full pack only with 100 pcs.)**	ea. ea.	1 100	WT1000.000 339656.290
	Roth Control Unit with ice and moisture sensor For automatic control of outdoor areas, driveways, loading platforms, airplane docking areas, pedestrian streets, and other areas that need to be kept free from ice and snow during the winter. Comes as a complete unit with a control unit, a snow and ice sensor, and a temperature and moisture sensor.	ea.	1	401976.901
	Roth Control Valve w/ flow sensor RAVK 25° - 60°. To be mounted on the primary side with the flow sensor on the secondary side of the exchanger.	ea.	1	451244.063
	Roth Frost Protection Valve w/ flow sensor AVTA 0° - 30°. To be mounted on the secondary side with the return flow sensor on the primary side of the exchanger.	ea.	1	451005.008
	Roth Press Straight-through Joint 25 x 2.3 mm For joining 25 mm SnowFlex® pipes	ea.	1	RW1000.110

SnowFlex® manifolds with accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth SnowFlex® Straight-through Joint PEH For joining 25 mm SnowFlex® pipes	ea.	1	FS1000.005
	Roth SnowFlex® Straight-through Joint PEH For joining 25 mm SnowFlex® pipes	ea.	1	401976.826
	Roth SnowFlex® Straight-through Joint,brass For joining 25 mm SnowFlex® pipes	ea.	1	401976.825
	Roth SnowFlex® Joint, brass **Transition 25 x ¾" socket** **Transition 25 x 1" socket**	 ea. ea.	 1 1	 401976.837 401976.838
	Roth SnowFlex® Joint, brass **Transition 25 x ¾" nipple** **Transition 25 x 1" nipple**	 ea. ea.	 1 1	 401976.835 401976.836
	Roth SnowFlex® Bend 25 mm socket, brass For joining 25 mm SnowFlex® pipes	ea.	1	401976.831
	Ground heat manifolds in PEH Manifold pipe in PEH PN 10, including joints for 25 x 2.3 mm SnowFlex® pipes.			
	Roth Manifold Pipe ø 40 mm/ 2 ram. c-c 90	set	1	PD1000.013
	Roth Manifold Pipe ø 40 mm/ 3 ram. c-c 90	set	1	PD1000.014
	Roth Manifold Pipe ø 40 mm/ 4 ram. c-c 90	set	1	PD1000.015
	Roth Manifold Pipe ø 40 mm/ 5 ram. c-c 90	set	1	PD1000.016
	Roth Manifold Pipe ø 40 mm/ 6 ram. c-c 90	set	1	PD1000.017
	Roth Manifold Pipe ø 40 mm/ 7 ram. c-c 90	set	1	PD1000.018
	Roth Manifold Pipe ø 40 mm/ 8 ram. c-c 90	set	1	PD1000.019
	Roth Manifold Pipe ø 40 mm/ 9 ram. c-c 90	set	1	PD1000.020
	Roth Manifold Pipe ø 40 mm/ 10 ram. c-c 90	set	1	PD1000.021
	Roth Manifold Pipe ø 75 mm/ 12 ram. c-c 500, s.	6 m	1	PD1000.011
	Roth Manifold Pipe ø 75 mm/ 24 ram. c-c 500, d.	6 m	1	PD1000.012
	Roth Manifold Pipe ø 75 mm/ 40 ram. c-c 150, s.	6 m	1	PD1000.005
	Roth Manifold Pipe ø 75 mm/ 80 ram. c-c 150, d.	6 m	1	PD1000.006
	Roth Manifold Pipe ø 110 mm/ 12 ram. c-c 500, s.	6 m	1	PD1000.007
	Roth Manifold Pipe ø 110 mm/ 24 ram. c-c 500, d.	6 m	1	PD1000.008
	Roth Manifold Pipe ø 110 mm/ 40 ram. c-c 150, s.	6 m	1	PD1000.009
	Roth Manifold Pipe ø 110 mm/ 80 ram. c-c 150, d.	6 m	1	PD1000.010
	s = single d=double			

SnowFlex® manifolds with accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	**Roth SnowFlex® manifold 1", Hand adjusted w/o manifold coupling. With jig.**			
	Roth GV-manifold unit - 2	ea.	1	401973.002
	Roth GV-manifold unit - 3	ea.	1	401973.003
	Roth GV-manifold unit - 4	ea.	1	401973.004
	Roth GV-manifold unit - 5	ea.	1	401973.005
	Roth GV-manifold unit - 6	ea.	1	401973.006
	Roth GV-manifold unit - 7	ea.	1	401973.007
	Roth GV-manifold unit - 8	ea.	1	401973.008
	Roth GV-manifold unit - 9	ea.	1	401973.009
	Roth GV-manifold unit - 10	ea.	1	401973.010
	Roth GV-manifold unit - 11	ea.	1	401973.011
	Roth GV-manifold unit - 12	ea.	1	401973.012
	Roth Transition 25 x ¾" socket, brass Used for Roth SnowFlex® manifold.	ea.	1	401976.837
	Roth End Piece with drain and ventilation, 1" Used for Roth SnowFlex® manifold.	ea.	1	401973.828
	SnowFlex® Industrial Manifolds in brass Ground heating manifold in brass, including ball valves, control valves, and manifold joints for 25 x 2.3 mm SnowFlex® pipes.			
	Roth SnowFlex® Industrial Manifold 1½" x 2 ram.	set	1	401976.002
	Roth SnowFlex® Industrial Manifold 1½" x 3 ram.	set	1	401976.003
	Roth SnowFlex® Industrial Manifold 1½" x 4 ram.	set	1	401970.604
	Roth SnowFlex® Industrial Manifold 1½" x 5 ram.	set	1	401970.605
	Roth SnowFlex® Industrial Manifold 1½" x 6 ram.	set	1	401970.606
	Roth Ball Cock 1½" for SnowFlex® Industrial Manifold To be mounted before the industrial manifold.	ea.	1	401976.811
	Roth Plug 1½" for SnowFlex® Industrial Manifold	ea.	1	401976.821
	Roth Console for SnowFlex® Industrial Manifold	set	1	401976.920

Roth SnowFlex® Pipe System

Planning and Project Design

... living full of energy!

Roth SnowFlex® Pipe System

A complete system that keeps areas free from snow and ice

The Roth SnowFlex® system is used for keeping outdoor areas free from snow and ice, including driveways, airfields, pedestrian streets, football fields, etc. A great amount of material damage and personal injury occurs as a result of inadequate snow removal and salting. With a snow-melting system on sidewalks (pavements) and similar places, the area is heated before snow and ice stick to the surfaces. By exploiting excess/surplus heat from industry, heating plants, etc., operating costs are kept relatively low, turning the snow-melting system into a great socioeconomic investment.

Unexpected snowfall often causes serious problems. Avoid problems – install Roth Nordic's snow-melting system, which keeps the desired areas free from snow and ice.

Roth Nordic has many years of experience designing snow-melting systems. Contact us for help with project design, calculations, material specifications, and drawings for specific systems.

Roth SnowFlex® snow-melting pipe 25 x 2.3 mm

Roth Snow-melting Pipes are manufactured from Polyethylene PERT. This pipe quality ensures a very long lifespan, simpler installation due to the pipe's flexible characteristics, as well as durability against high pressure and temperature variations. Snow-melting pipes normally do not feature a diffusion lock and are often used in systems with a heat exchanger.

Technical characteristics

Characteristic	Value
Pigmentation content	<1%
Density	0,932 g/cm³
Ultimate stress	16,5 N/mm²
Elongation after fracture	>800%
Max operating pressure	10 bar (145 PSI) at 20° C. (68° F.)
Max. operating temperature	50° C. (122° F.) at 7 bar (101.5 PSI)
Water volume	0,320 l/m

Roth SnowFlex® Pipe System

PEH Manifold

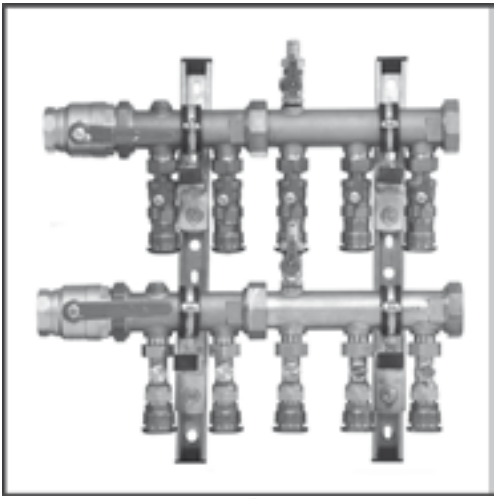
The manifold is available in PEH PN10 and comes complete with 25 x 2.3 mm joints. The manifold is available with plugs and assembly flanges, etc. We can also deliver custom made manifolds.

Characteristics:

- High durability
- Light and flexible
- No corrosion

Brass manifold

The manifold comes complete in 1" or 1½" brass, incl. shut-off valves, 25 x 2.3 mm manifold joints, and jigs.



Control Unit

The control unit comes as a complete unit with a control central and sensors for temperature and moisture, as well as snow and ice. These components facilitate a smart control that only starts the snow-melting system when necessary. This type of control provides a significant reduction in operating costs compared to normal thermostat controls or manual controls.

Economics

Water borne snow-melting system - the economic alternative. Water borne snow-melting systems make it possible to alternate between different energy sources and thereby use the most cost-effective one. Large amounts of energy can be saved by exploiting waste heat from industry, heat plants, etc. With Roth's control, the system is only activated as needed. The systems are typically designed for a heat emission of 250-300 w/m². An annual energy consumption of up to 500 kwh/m² can be expected, depending on the control system and local and climate conditions.

Planning

Design

The effect is designed to range from150 w/m² to 350 w/m², depending on climate conditions and system speed requirements; i.e., how fast snow and ice need to be removed. The normal effect is 250 w/m².

Principle sketch

The advantage of a snow-melting system is the relatively low water temperature requirement. For most systems, the water temperature requirement is 35-40o C. (95-104o F.), which means that many different heat sources can be used. From the heat source, the heat from the primary withium is exchanged over to the snow-melting system. A pump on the secondary side circulates the heat out into the heating hoses. To save energy, the automated system ensures that heat is only added when there is a need for snow and ice melting.
To prevent the exchanger from freezing, the temperature of the return water can be controlled through the anti-frost valve.

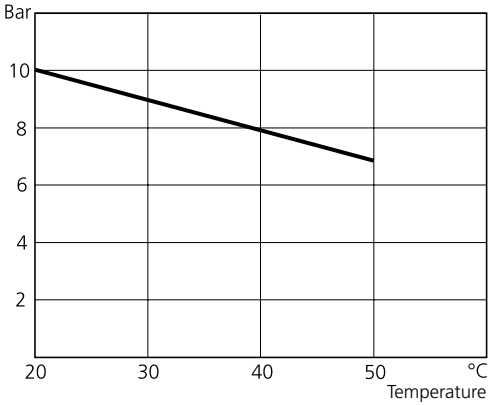
1. Control valve
2. Heat exchanger
3. Manometer
4. Overflow tank and safety valve
5. Dirt collector
6. Air escape
7. Filler valve
8. Pump
9. Pump or valve
10. Anti-frost valve
11. Control central
12. Ice and snow sensor
13. Temperature and moisture sensor
14. Manifold pipe

Control equipment

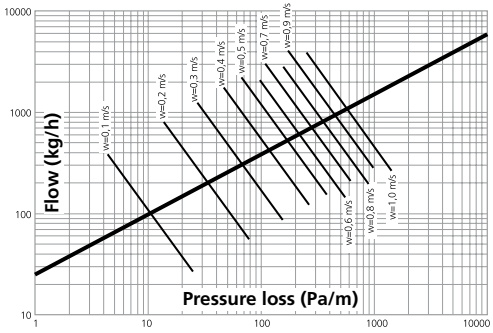
The following components are included in the Roth control system for snow melting:

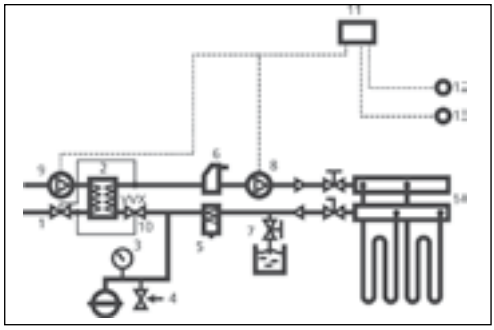
11. Control central
12. Ice and snow sensor
13. Temperature and moisture sensor

Max operating pressure



Pressure loss diagram for SnowFlex® pipe 25 x 2.3 mm (Tm=60 °C)





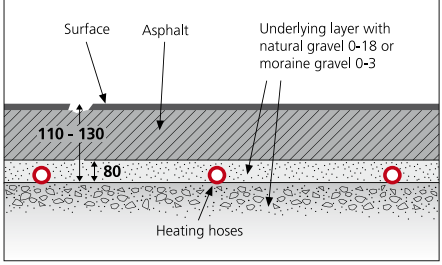
Assortment

Item	Dimension
Roth SnowFlex® Pipe	25 x 2.3 mm
PEH PN 10 manifolds	40 x 3.7 mm
PEH PN 10 manifolds	75 x 6.8 mm
PEH PN 10 manifolds	110 x 6.6 mm
Brass manifolds (industry)	1½"
Brass manifolds	1"
Mounting rail	25 mm
Various joints	25 x 2.3 mm

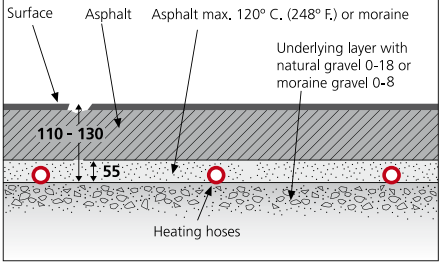
Roth SnowFlex® Pipe System

Roth snow-melting systems in different constructions

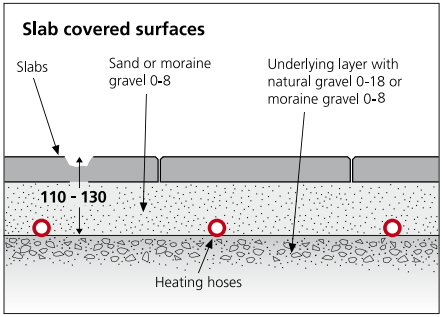
Asphalt surfaces, low stress



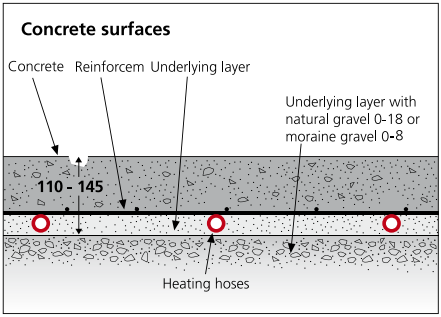
Asphalt surfaces, heavy stress



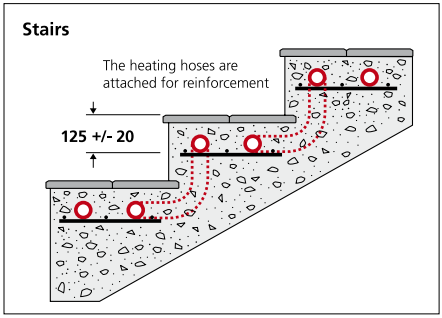
Slab covered surfaces



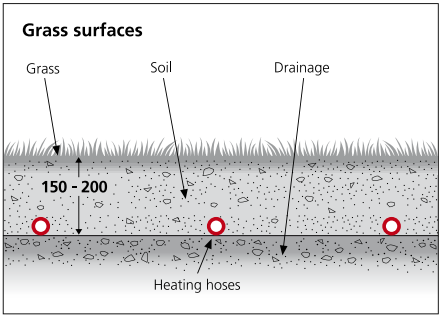
Concrete surfaces



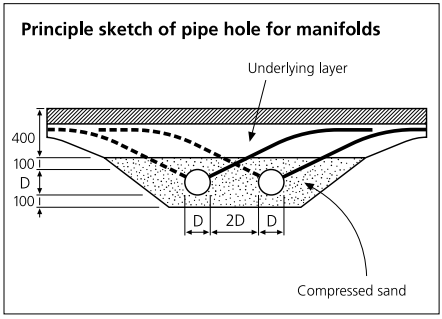
Stairs



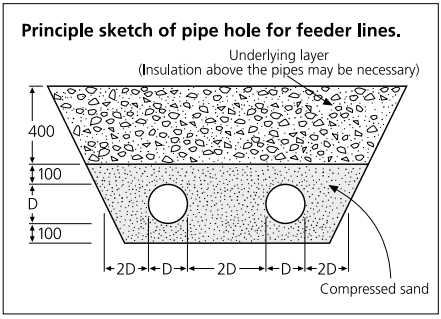
Grass surfaces



Principle sketch of pipe hole for manifolds



Principle sketch of pipe hole for feeder lines.

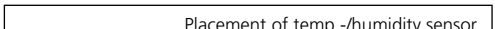


Roth SnowFlex® Pipe System

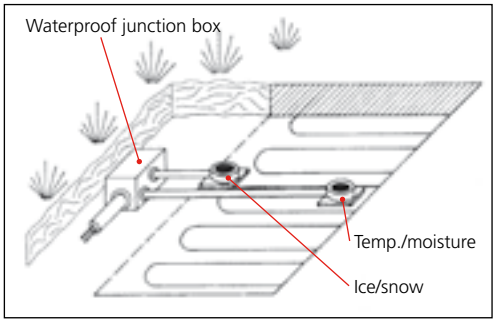
The placement of the temperature/moisture sensor and the ice/snow sensor for the Roth SnowFlex control is important. Always follow the instructions below.

The two sensor types are distinguished by the fact that the temperature/moisture sensor has 4 conductors and the ice/snow sensor has 5 conductors.

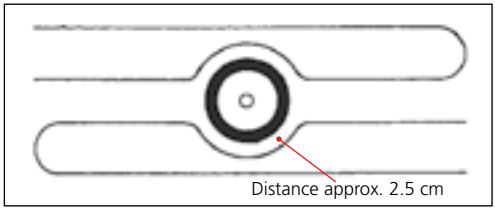
Drawing 1
For ramps, the sensors need to be placed on the bottom of the ramps as illustrated below.



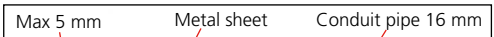
Drawing 2
Place the temperature/moisture sensor within the heating area between two pipes, leaving a distance of approx. 2.5 cm (1 inch) to the SnowFlex Pipes. See drawing 2a.
The ice/snow sensor is also placed within the heating area, though at a distance of approx. 20 cm (7.9 inches) to the actual SnowFlex pipes.



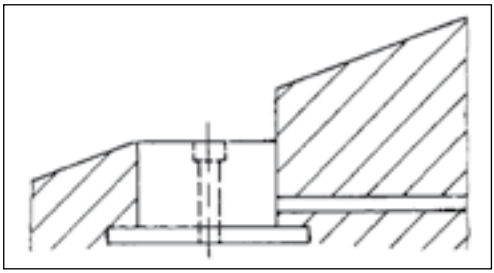
Drawing 2a
Place the temperature/moisture sensor between two SnowFlex pipes. The distance to the SnowFlex pipes must always be 2.5 cm (1 inch).



Drawing 3
The sensors also include a metal sheet for attachment and a wooden block that can be temporarily placed on the metal sheet while the installation is completed. It is a good idea to run the feeder lines through conduit pipes. Place the sensors in the structure as shown in the drawing.



Drawing 4
It is important that the sensors do not follow any inclines; place them horizontally as shown in the structure.



Handling/Installation

Handling

Do not store SnowFlex® pipes in direct sunlight for extended periods of time. Do not remove the packaging from the pipes until you begin installation.

The pipes are not diffusion tight. This means that the system always has to be connected to the heat source over a heat exchanger.

The SnowFlex® pipes come in standard rolls of 220 m or 1020 m. For large projects, other lengths can be custom ordered.

The SnowFlex® pipe can be covered directly with asphalt as long as the temperature of the asphalt does not exceed 120o C (248o F.). However, this requires cold water circulation under pressure in the pipes.

Installation

The pipes can also be installed in sand and then be covered by asphalt, slabs, rocks, etc.

For heating of ramps, roadways, sidewalks (pavements), parking areas, etc., the pipes need to be placed between 110 and 130 mm below the completed surface and with a CC distance in accordance with the project design, typically 250 mm. This way, pipe consumption will be approx. 4.0 m/m2.

The pipes are installed according to instructions from Roth Nordic. The pipes are locked in place with mounting rails prior to being covered. The mounting rails can possibly be removed as the pipes are covered. The pipes need to be pressure tested with 0.2 Mpa before being covered. If water is used for the pressure test, add antifreeze.

NOTE! Areas with heavy traffic require approval by the statics engineer in charge.

Installation

The pipe can be covered with gravel 0-18

Pressure testing

Pressure-test the system according to the system description or sufficiently to ensure that the system contains no leaks. Be aware of expansion during heating and that this may cause pressure variations.

Own Notes

Roth Tank System
Product Range

... living full of energy!

Roth Tanks and Accessories

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth DVT oil tank Double-walled tank, built with an interior plastic container in polyethylene enclosed in a corrosion resistant covering. The tank can be installed indoors in an unheated room. The tank is equipped with a sounding tube, four 2" connections, a tank meter, a tank alarm, and one 1½" nipple joint made of plastic. **Roth DVT oil tank 620 l** **Roth DVT oil tank 1000 l** **Roth DVT oil tank 1500 l**	 ea. ea. ea.	 1 1 1	 367143.006 367143.010 367143.015
	2" x 1½" plastic nipple joint	ea.	1	367143.824
	2" plastic circulator set	ea.	1	367143.832
	Sounding tube for 620 and 1000 L **Sounding tube for 1500 L** **Rubber packing for sounding tube**	ea. ea. ea.	1 1 1	367143.840 367143.845 367143.846
	Oil amount indicator for 620 and 1000 L **Oil amount indicator for 1500 L**	ea. ea.	1 1	367143.860 367143.865
	1½" tank alarm with plastic cap	ea.	1	367173.911

Roth Tank System

Installation, operation, and maintenance

... living full of energy!

Roth DVT Oil Tanks

Roth DVT oil tanks are developed and produced for storing diesel and heating oil. The oil tanks are approved pursuant to declaration no. 724 by the Danish Ministry of the Environment dated July 1, 2008.

The tanks are available in three sizes to meet every need: 620, 1000, and 1500 litres.

Roth DVT tanks are covered by a 15-year warranty for indoor installation.

This warranty covers the oil tanks as well as any consequential damage caused by leakage. Roth DVT oil tanks ensure cost-effective, flexible, and safe storage

Technical description

Roth DVT oil tanks are double-walled tanks built with an internal tuyere shaped plastic container made of polyethylene and enclosed by a corrosion resistant steel covering. In the hollow space between the plastic container and the steel covering, a sounding tube is installed to report any leakage in the plastic container.

The tank is equipped with four 2" connections and comes with a tank meter, a tank alarm (long), as well as a 1½" plastic nipple joint.

The tank is equipped with two carrying handles that make it easy to transport. The tank can be installed separately or interconnected with other tanks.

The plastic container:
The container is made in polyethylene according to the CoEx plus method (double extrusion). This method creates a double-walled container where each layer has different characteristics. The first layer is UV resistant and diffusion tight, whereas the inner layer undergoes a chemical process during extrusion, resulting in a significant material improvement compared to normal polyethylene.

The steel covering:
The covering is made of a galvanized steel plate, and all joints are made by flanging. The tank is placed on a galvanized base. In the hollow space between the plastic container and the steel covering, a sounding tube is installed that will report any leakage in the plastic container.

Technical specifications

Roth DVT tanks	HVAC no.
620 litres	367143.006
1000 litres	367143.010
1500 litres	367143.015

Volume Liter	Length mm	Width mm	Heigth mm	Weight Kg.
620	740	700	1600	65
1000	1100	700	1600	84
1500	1630	770	1950	151

The tanks are approved pursuant to declaration no. 729 by the Danish Ministry of the Environment dated June 14, 2007, regarding the lay-out, establishment, and operation of oil tanks, pipe systems, and pipelines.

Tanks approved pursuant to the declaration may be used for storage of diesel oil, heating oil, as well as other flammable liquids with a flash point above 55° C. (131° F.).

Material, plastic containers:
PEHD CoEx plus

Material, steel covering:
1 mm. (covering and end pieces) zinc coated steel plate (Zn-AL)
0.75 mm (top) zinc coated steel plate (Zn-Al).

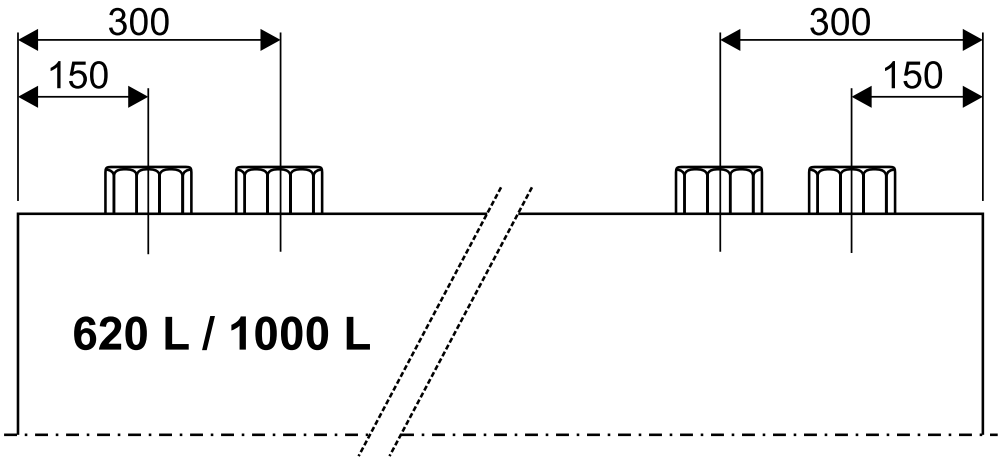
Setup and operation:
Setup and connection of tanks must always take place pursuant to the declaration.
Setup and transport may only take place when the tanks is empty, when using carrying handles, or by using a forklift (stacker). The tank system may only be used without pressure, and the max. allowed operating temperature is 30° C.(86°F.).
The oil tanks are installed on the supplied frame on a permanent, stable sublayer that is level and plumb, such as slabs or cast concrete.
The suction pipe, which may consist of a plastic covered CU pipe, is inserted through a tank sleeve and down to 10 cm above the tank bottom. The tanks is filled using a 2" galvanized pipe and must be finished using a tight-fitting screw cap.
The ventilation pipe is made of 1½" galvanized pipe and needs to be equipped with an alarm (included) that is screwed directly into the tank. The tank includes a tank declaration that needs to be filled out with a copy to be sent to the municipality where the tank is installed.

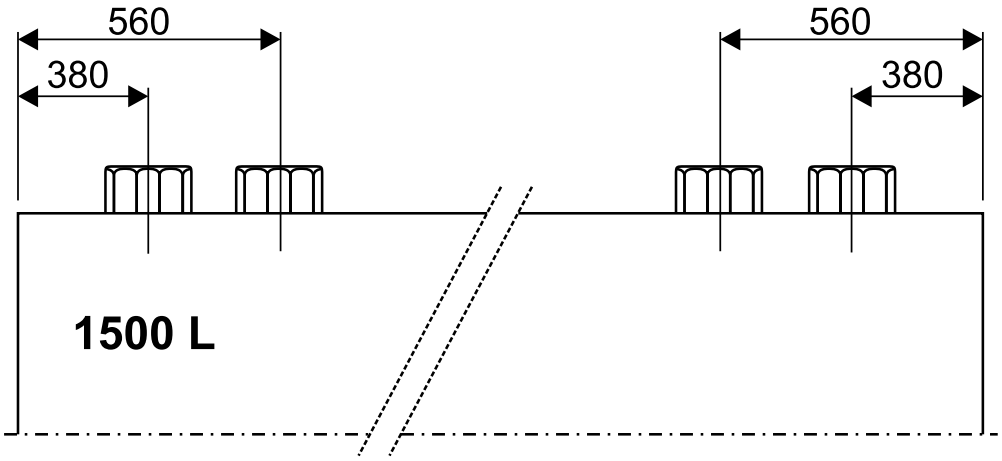
Warranty
We offer the tank owner a manufacturer's warranty of:
• 15 years for indoor installation

Every tank comes with a warranty certificate that must be signed and stamped by the company that installs the tank. Without the stamp and signature, the tank and/or any consequential damages will not be covered by warranty. Failure to comply with the transportation, installation, and operating instructions shall indisputably render this warranty void.

Roth DVT Oil Tanks

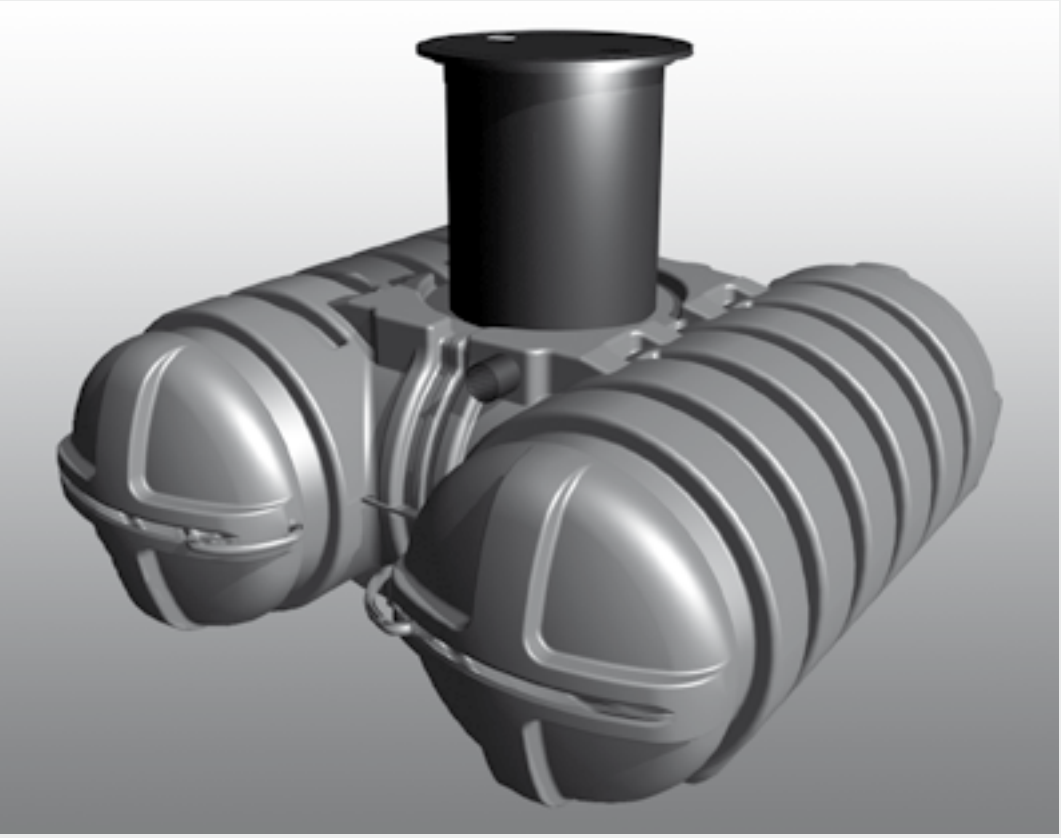
Sketch of dimensions
Placement of connectors





Own notes

Roth Rainwater
Product Range



... living full of energy!

Roth Rainwater Tanks for underground installation

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Twin rainwater tanks for underground installation Roth Twin rainwater tanks are made of polyethylene, which ensures inherent stability and tightness. **Roth Twin Regnvandstank 3500 l** Measurements (L x W x H 2350 x 2300 x 975 mm Weight: 140 kg	ea.	1	1215002208
	Roth Twin Rainwater Tank 5000 L Measurements (L x W x H) 2430 x 2300 1350 mm Weight: 170 kg	ea.	1	1215002209
	Roth Rainwater Tanks for underground installation **Roth Rainwater Tank 6000 L** Measurements (length x width x height): 3120 x 1830 x 1920 mm Weight: 300 kg	ea.	1	1215000743
	Roth Dowith Shaft with light cover Consists of plastic. Adjustable height: min. 550 mm, max. 950 mm	ea.	1	1215001201
	Roth Dowith Shaft without filter Consists of plastic. Used in connection with expansion of Rainwater Tank 3500 L - 6000 L. Adjustable height: min. 850 mm, max. 1250 mm Int. diam.: 625 mm	ea.	1	1215001351
	Roth Dowith Shaft with filter Consists of plastic. Used in connection with expansion of Rainwater Tank 3500 L - 6000 L. Adjustable height: min. 850 mm, max. 1250 mm Int. diam.: 625 mm Mask size on filter 0,55 mm	ea.	1	1215001352
	Roth Cartridge Filter for 150 m2 roof surface Filter in stainless steel. Height difference: 66 mm Mask size on filter 0.55 mm	ea.	1	1215001661

Pumps and Controls for underground Tanks

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth "Komfort" Pump Module Complete module with integrated water pump system. Replenished in the cistern and not in the tank. Electronic level indicator.	ea.	1	1235000550
	Roth Pump Module "Standard" Analog Pump Module. Without electronic level indicator.	ea.	1	1235000660
	Roth Replenishing Set "Komfort" Fully automatic electronic control unit for replenishing the water pump system. Monitor with alarm and regular water replacement.	ea.	1	1235000371
	Roth Domestic Water Pump System 4-step horizontal self-priming pump. Independent protection from running dry. 1" connections. Power consumption: 700 W Max. Lifting height: 42 m Water volume: 3.5 m³/h Max. Suction height: 3 m Max. length of suctioning hose: 15 m Weight: 11.4 kg	ea.	1	1235000373
	Roth Ground Filter - DN 100 For combining several rainwater pipes DN 100 Mask size of filter: 0,28 mm	ea.	1	1235000010
	Roth Labelling Set For labelling the rainwater system in the house. With text in German.	ea.	1	1235000380
	Roth Floating Suction Filter Consists of floating ball, flow filter with check valve, a 2 m special hose, and a clamp fitting for installing 1" PE water pipe.	ea.	1	1235000370
	Roth Submersible Pump Power consumption: 800 W Water volume: 5.4m³/h Pressure: 3.5 bar (50 PSI)	ea.	1	1235000492
	Roth Ground Filter for 350 m² roof surface Complete telescopic ground filter. Filter in stainless steel. DN 100 connection and DN 125 drain. Mask size of filter: 0.55 mm	ea.	1	1235000497

Rainwater Tanks for Installation in Basement

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Rainwater Tanks for installation in basement The rainwater tank is made of polyethylene. **Roth Rainwater Tank 750 L, basic** Measurements (length x width x height): 730 x 730 x 1660 mm Weight: 25 kg	ea.	1	1215000911
	Roth Rainwater Tank 750 L, expandable Measurements (length x width x height): 730 x 730 x 1660 mm Weight: 25 kg	ea.	1	1215000901
	Roth Rainwater Tank 1100 L, basic Measurements (length x width x height): 1450 x 720 x 1375 mm Weight: 53 kg	ea.	1	1215000721
	Roth Rainwater Tank 1100 L, expandable Measurements (length x width x height): 1450 x 720 x 1375 mm Weight: 53 kg	ea.	1	1215000722
	Roth Rainwater Tank 1500 L, basic Measurements (length x width x height): 1520 x 720 x 1375 mm Weight: 80 kg	ea.	1	1215000752
	Roth Rainwater Tank 1500 L, expandable Measurements (length x width x height): 1520 x 720 x 1375 mm Weight: 80 kg	ea.	1	1215000753
	Roth Rainwater Tank 2000 L, basic Measurements (length x width x height): 2050 x 720 x 1640 mm Weight: 120 kg	ea.	1	1215000601
	Roth Rainwater Tank 2000 L, expandable Measurements (length x width x height): 2050 x 720 x 1640 mm Weight: 120 kg	ea.	1	1215000648

Connections & Accessories Basement Tanks

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Connection Unit for basic tank Consists of a connector bend, a shut-off valve with flange, packing, and screws.	ea.	1	1235000047
	Roth Connection Unit for expansion tank Includes packing, screws, and 2" ventilation cap.	ea.	1	1235000048
	Roth Universal flange connection 1" bend **Roth Universal flange connection 2" bend**	ea. ea.	1 1	1235000285 1235000287
	Roth Universal flange connection 1" Tee **Roth Universal flange connection 2" Tee**	ea. ea.	1 1	1235000286 1235000288
	Roth Overflow Siphon	ea.	1	1235001663
	Roth Domestic Water Pump System 4-step horizontal self-priming pump. Independent protection from running dry. 1" connections. Power consumption: 700 W Max. Lifting height: 42 m Water volume: 3.5 m³/h Max. Suction height: 3 m Max. length of suctioning hose: 15 m Weight: 11.4 kg	ea.	1	1235000373
	Roth Mechanical Water Level Meter Used for basement tanks with a volume of 750, 1100, 1500, and 2000 litres.	ea.	1	1235000141

Filters and Extension Pipes

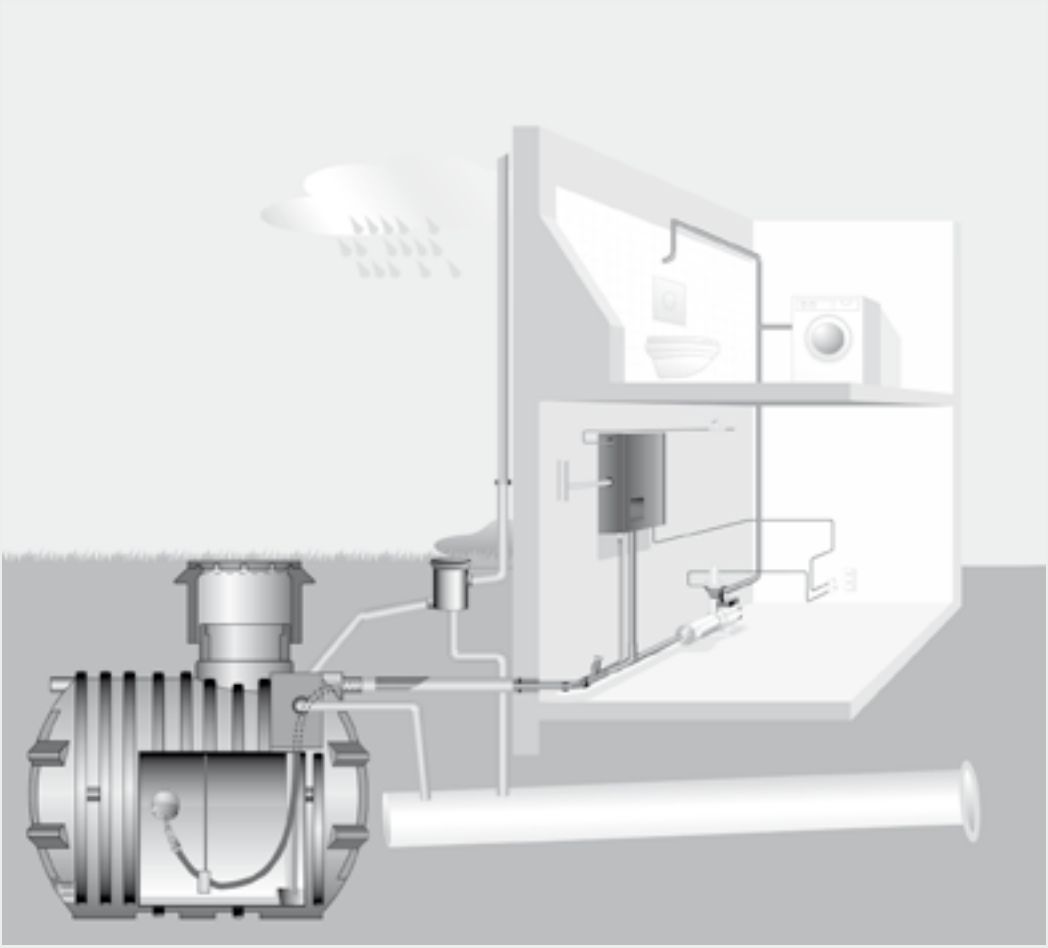
ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Underground Filter - DN 100 For combining several rainwater pipes DN 100. Mask size of filter: 0,28 mm	ea.	1	1235000010
	Roth Soil Pipe Filter, Zinc - DN 100 Filters and collects rainwater for storage. DN 100 connection. Mask size of filter: 0,315 mm	ea.	1	1235000015
	Roth Faldpipesfilter, Kobber - DN 100 Filters and collects rainwater for storage. DN 100 connection. Mask size of filter: 0,315 mm	ea.	1	1235000016

Complete Domestic Systems w. Underground Tank

	Roth Domestic System 3500 l, Twin Tank Consists of a 3500 L tank, adjustable shaft, filter, floating suction filter, and "Komfort" pump module. Complete system for single family homes. Weight: approx. 140 kg	ea.	1	1215002192

Roth Rainwater Systems

System solutions for pros



... living full of energy!

Saving the environment – Saves water and money ...good reasons for using rainwater

Why collect rainwater?

Almost all homes have water lines! Is a rainwater system even "worth it"? Indeed it is. There are several good reasons for exploiting rainwater:

- Increased surface sealing caused by buildings and roads prevents rainwater from being absorbed into the ground, thereby deteriorating the groundwater.
- Where groundwater is exploited, the decreasing water level is an indicator of excessive exploitation of natural resources.
- Areas where more water is consuwith than what is generated require water supplies via costly long-distance pipelines.
- The costs of drinking water purification remain on the rise, which in turn increases taxes. However, this high quality is only required for part of the water.
- Diverting rainwater requires rather large canals. This places an unnecessary strain on water treatment plants and may cause flooding. Thus, exploitation of rainwater is a measure that makes sense, for ecological as well as economical reasons, if in the long term we wish to retain harmony in water resources for both humans and the natural environment.

Growing public interest has led to the promotion of the construction of rainwater systems in many locations.

The current daily tap water consumption is approx. 140 litres per person. By consciously limiting our water consumption, we can reduce it to as low as 100 L without giving up our comfort level.

However, in some areas we can entirely avoid using the costly drinking water; there is no problem associated with using rainwater for:

- **Flushing the toilet**
- **Laundry**

This way we can achieve up to 42% in savings on drinking water without a problem.
Professional, properly designed rainwater systems ensure fully adequate water quality in these areas.
Research has shown that the quality of rainwater is significantly higher than the minimum requirement for swimming at our beaches. Likewise, laundry washed with rainwater has not shown to contain higher bacterial contents than laundry washed in regular tap water.

First and foremost, let us use drinking water where necessary; mother nature supplies us with sufficient amounts of rainwater for domestic use everywhere. Today, rainwater exploitation is a recognized option. From an ecological frame of mind, it should not be ignored with the modern installation techniques that we have.

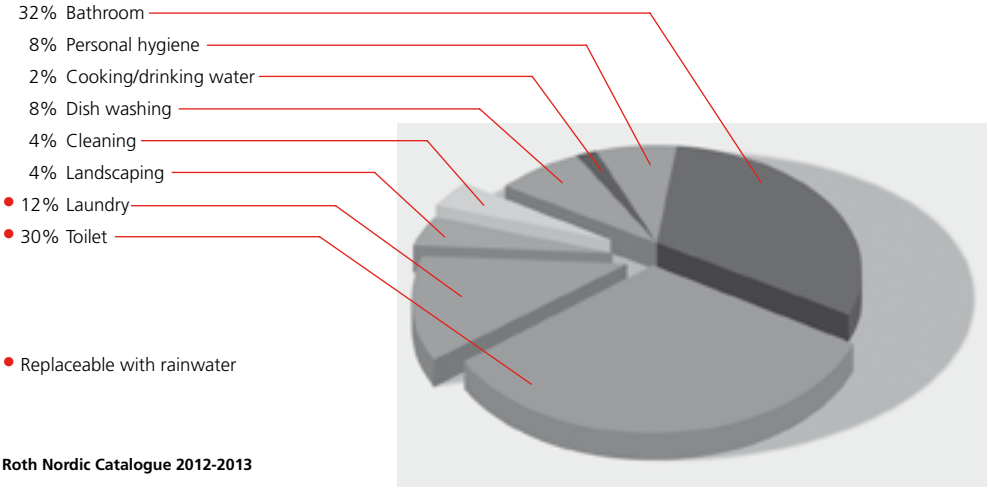
Roth – a specialist in containers

and with years of experience (competence) in the area of water and domestic water systems, especially as far as containers (polyethylene oil tanks) are concerned.

Roth Rainwater Containers
are manufactured in a light-protecting colour and are completely tight since they are seamlessly produced in one piece. The containers are manufactured from 100% recyclable polyethylene (PE) of a very high quality. The different container sizes are installed quickly and easily and in a way that makes it possible to customize rainwater storage according to individual preferences.

By choosing a **Roth Rainwater System**, all the advantages of a total solution for all usage areas are achieved. At the same time, it ensures fast installation and reliability, and the manufacturing of all components is based on the most recent technology.

Average water consumption in a household



General Requirements

… for rainwater systems

The size and shape of the rainwater system are determined by certain local conditions as well as preferences for usage and comfort.
Generally, only high-quality compatible products should be used. Likewise, it is also recommended to leave planning and installation of the system to professionals in order to achieve a system that in the long term will work and not require extensive maintenance expenses. The following criteria are the current minimum requirements for the technical standard that a rainwater system should meet.

1: Drainage surfaces
Rooftops are particularly suitable as drainage surfaces for rainwater, especially tile, concrete, slate, and glass roof structures. Other roof structures, including thatched roofing, should not be used because of impurities.

2: Line installation
The line running to the container should be as short and as straight as possible. In practice, it has turned out that frost-free depth does not need to be prioritized higher than container size; during heavy frost conditions, there is no rainwater drainage from the roof.

3: Filtration
Before reaching the container, the rainwater must be led through a tightly masked filter (mask size < 0.2 mm). Highly effective, self-cleaning filters that do not deteriorate the pipe cross section are preferred since they do not require as much maintenance and do not obstruct the water flow.

4: Container
From the factory end, rainwater containers should be manufactured in such a way that they are completely tight and come equipped with all necessary connectors. It is important that the water is supplied in a calm fashion and that the container is equipped with an overflow safety device. Underground containers should also be an option, and a container for indoor use will ensure water storage away from direct sunlight.

Container Design
When creating the design, around 6% of the annual rainwater volume (T; precipitation volume) can be entered as container volume (V). V = T x 6%. The rainwater volume (T) is calculated according to the following equation:

T = A x N x R1 x R2 = L. per year
A = attached ground surface covered by roof (e.g., building length x width in m²).
N = local annual precipitation volume, in Denmark typically between 600 and 700 litres per m².
R1 = drainage coefficient (considers loss, such as from splashing, evaporation, and filtration loss, typically 0.7 - 0.8)
R2 = 0.9 - other deductions due to filters, overflow, etc.

5: Water flow well
Even the finest dust particles are deposited on the bottom of the container, creating a sediment layer that affects the water in a positive way. To prevent the sediment from being stirred up, the container flow line needs to be inserted all the way to the bottom, allowing the water to rise.

6: Container overflow
When properly designed, the container will run over several times a year. A bent siphon trap with a deep drain will produce a suction effect that will rinse the water surface from "floating layers", and which will serve as an door trap. A safety device should be installed to prevent animals from entering the container. The overflow should preferably be connected to a cesspool or the sewer system.
7: It is important that system parts installed below the return flow level are equipped with return flow protection. The risk of consequential damage to buildings and domestic systems should be eliminated.

8: Water outlet
To achieve the cleanest possible water from the container, you should avoid siphoning the bottom sediment as well as the surface layer. For this reason, the water outlet should be placed either approx. 10 cm above the bottom or approx. 10 cm below the water surface (surface outlet). For systems with a ground container, the outlet pipe must be placed at a frost-free depth.

9: Wall ducts
Pipes that in the ground layer run through the outer wall of the container should be both solidly and elastically sealed.

10: Domestic water pump systems
The water pump systems should be installed with the lowest possible siphoning height; i.e., the water flows by itself. The best suitable solution are multiple-step gyro pumps with an automatic switch and integrated dry run protection. These are characterized by easy and durable operation and limited power consumption.

12: Replenishment with tap water
During extended periods of drought, rainwater supplies may become exhausted. In such a case, it will become necessary to add tap water to the system in order to supply the connected areas of consumption. Replenishment should only take place through a free branch. Control setting number 12 is preferable; this way the system will be ready for supplies.

13: Domestic rainwater system installation
The use of a rainwater system requires the availability of a line system that is completely separate from the tap water supply (perhaps marked by a different colour). Due to its chemical characteristics, rainwater may react in metal conduits (corrosion). For this reason, artificial material is the preferred material for rainwater systems.

14: Labelling
The system must be labelled to prevent confusion between the line systems during repairs, etc.
- Rainwater lines need to be labelled with labelling tape or stickers.
- Place a sign with reference to the rainwater system by the water meter
- Tap locations are equipped with a "not for drinking" label and feature a removable handle for child safety.

Rainwater Systems

... Rights and obligations

Notification and approval

Rainwater systems are legal; however, certain rules apply with regards to notification and approval. These rules may vary from place to place.

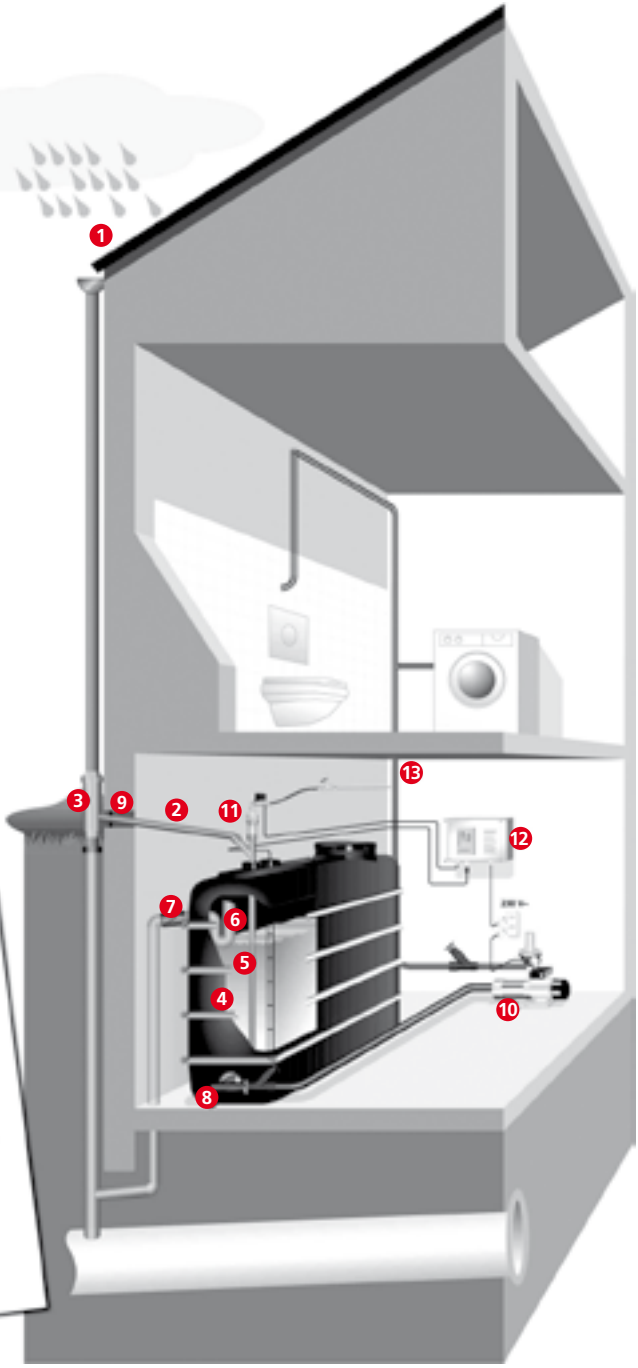
1. **Building authorities**
   (For underground tanks)
   - For new construction: information about drainage plan
   - For installation in an existing buil ding: duty of notification

2. **Municipal water supply**
   - Application for partial exemption from connection and usage requirements for the drinking water supply (legal requirements)
   - Duty of notification prior to installation of system

3. **Municipal waste water drainage**
   - Application for partial exemption from connection and usage requirements for waste water removal (legal requirements)

4. **Water authorities - drainage**
   - Permit from water authorities for drainage of container overflow

5. **Subsidies**
   - Some areas provide subsidies for rainwater exploitation
     - contact the local authorities



Roth containers for domestic and industrial systems

.... flexible systems

Roth containers for domestic systems are available in the following sizes: 750, 1100, 1500, and 2000 litres. The containers are manufactured in green to prevent harmful light influences. The main container and extension modules are inter-connectible. The main container is equipped with a flow well and a siphon trap on the overflow. The siphon trap features a built-in obstruction to prevent smaller animals from entering. The overflow is attached on the left side (may be attached on the right side on custom editions). In addition, there is a flange for attaching drainage or connector lines.

Roth industrial containers
- particularly suitable for outdoor installation. The desired container volume can be achieved by inter-connecting the containers through two flange connections in the bottom and the associated accessories.

Container systems for industrial and domestic use
- ideal in a frost-free room with space for containers and installation.

1. Roth basic domestic container (expansion container not included)
2. Soil pipe or stand pipe filter.
3a. System control with content meter, solenoid valve, tank sensor, and funnel
3b. Manual tap water filler funnel and mechanical content meter alternative to 3a.
4. Domestic water pump system with automatic pressure switch and 2 hoses
5. Connector accessories for basic domestic tank Flange connector bend, stop valve, seal, and screws
6. Wall duct System control breaker:

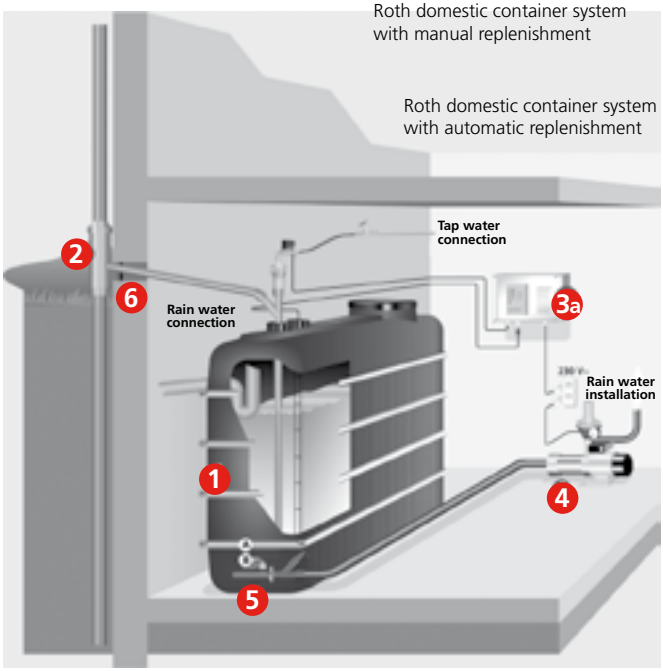
A. Tap water filling OUT
B. Tap water filling IN

Roth domestic containers: 750, 1100, 1500, and 2000 liters

Roth domestic containers: 4 x 750 liter system

Roth domestic container system with manual replenishment

Roth domestic container system with automatic replenishment



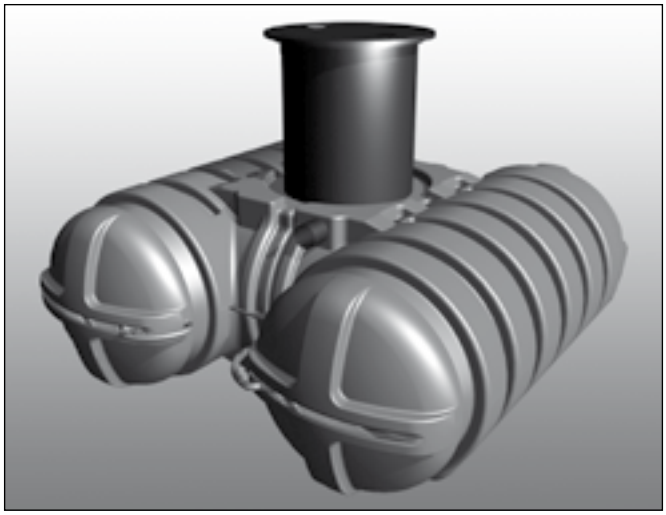
Roth Underground Tank Systems

.... ready-to-build with proper accessories

Roth underground rainwater tank, round

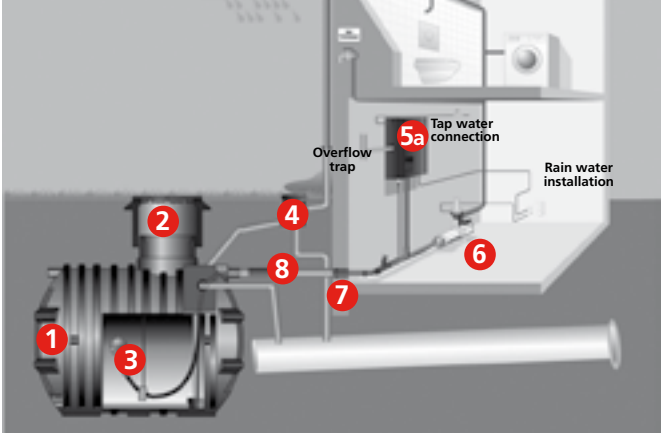
available in the following sizes: 3500, 4500, and 6000 L. The PE containers are water proof and ground stable and come equipped with a flow well and an overflow trap with an obstruction for small animals. The shaft can be adjusted from 800 to a max. of 1250 mm.

The shaft is available with or without an integrated filter.



Roth rainwater container for underground placement

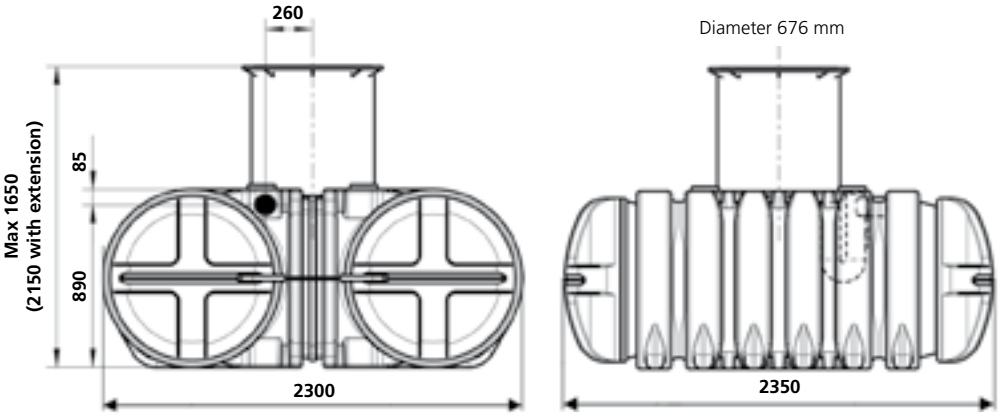
1. Roth rainwater tanks for underground placement, round, 3300, 4700, or 6500 litres with equipment for flow well and overflow trap
2. Shaft system with stepless, adjustable height
3. Floating outlets
4. Underground installation filter
5a. Filler module Tap water filler module and tank sensor
5b. Rain manager
Rainwater filler module with an integrated domestic water pump system and a tank sensor (not shown; alternative to 5a)
6. Domestic water pump system with automatic reverser
7. Wall ducts



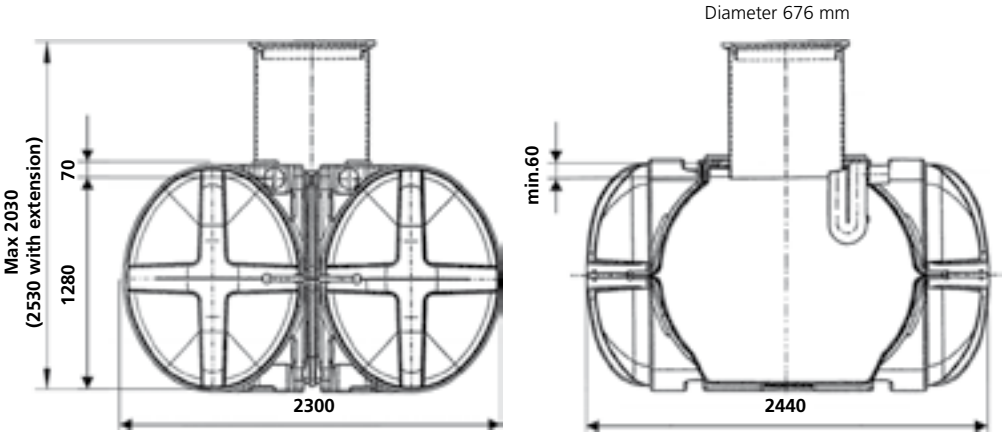
Roth Rainwater Twintank

Sketch of dimensions – All measurements in mm.

Twintank 3500 litre



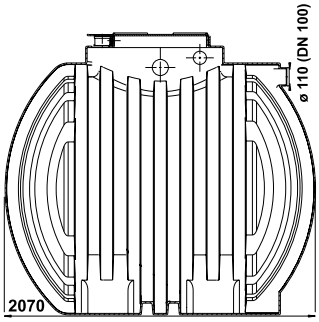
Twintank 5000 litre

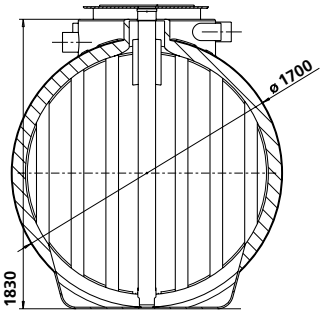


Roth Rainwater Tanks for Underground Placement

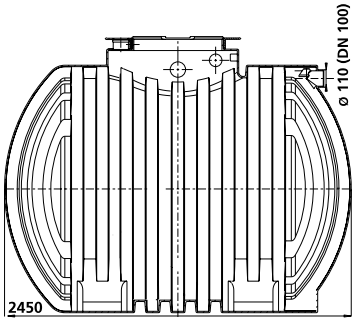
Sketch of dimensions - All measurements in mm.

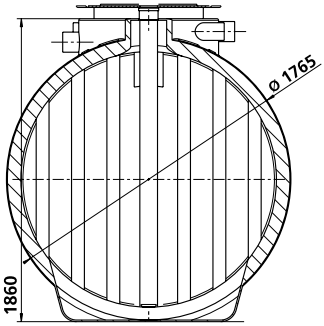
Rainwater Tanks for underground placement, 3500 l



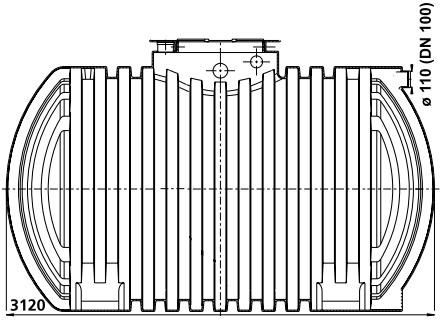


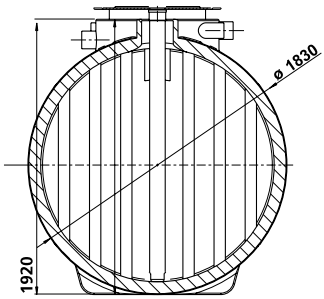
Rainwater Tanks for underground placement, 4500 l





Rainwater Tanks for underground placement, 6000 l

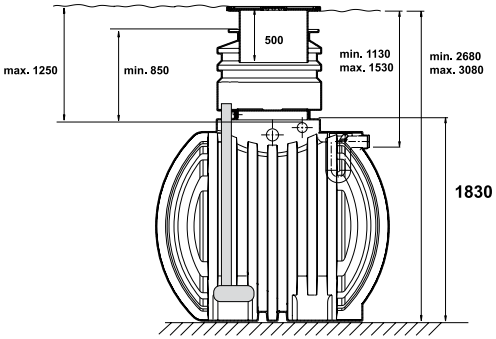


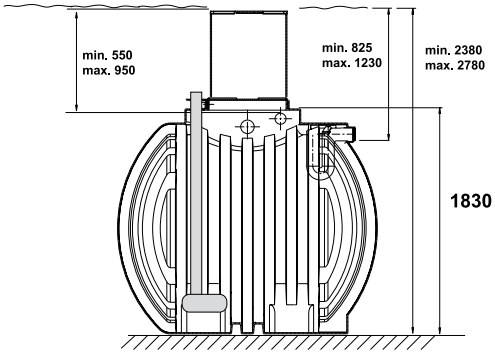


Roth Rainwater Tanks for Underground Placement

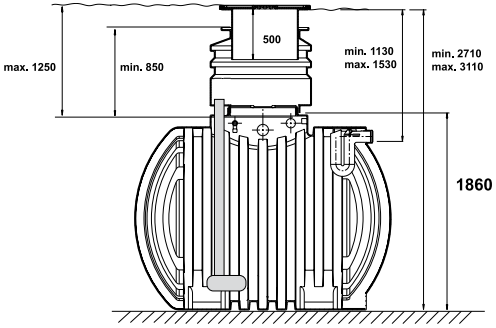
Sketch of dimensions - All measurements in mm.

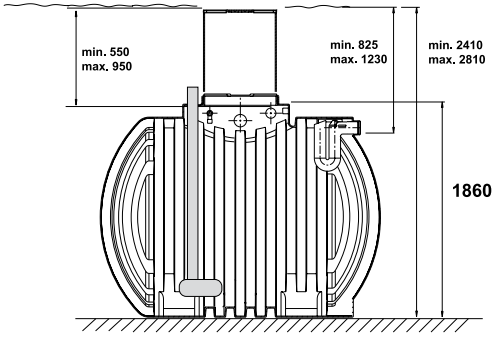
Rainwater Tanks for underground placement round 3500 l



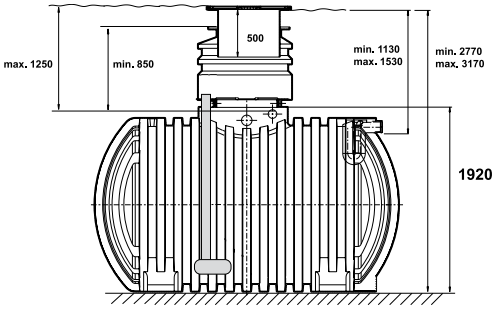


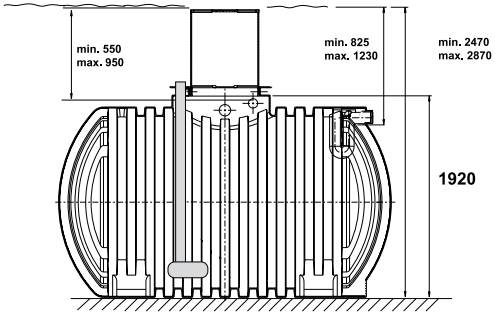
Rainwater Tanks for underground placement round 4500 l





Rainwater Tanks for underground placement round 6000 l





Project Design and Installation

... of Roth Underground Rainwater Tanks

Project Design

Roth underground rainwater tanks must be buried underground in areas free from traffic. Any strain caused by traffic should be avoided to prevent strain on the container. Do not exceed the recommended building depth.

Roth underground rainwater tanks should only be installed on properties without groundwater. If there is a risk of the appearance water layers in water proof soil layers, such layers will have to be drained. When installing multiple containers side by side, a minimum distance of 600 mm should be maintained.

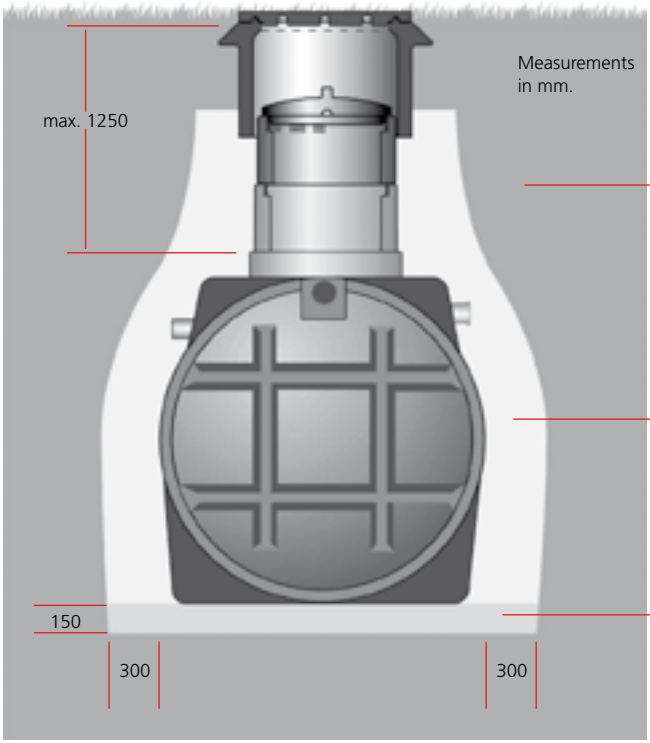
Installation guide

The installation should only be perforwith by persons or companies capable of guaranteeing proper, professional installation, and the applicable accident prevention regulations should be adhered to. Digging must take place with consideration for the size and number of containers and the flow depth. If the lot is solid, a gravel layer (otherwise a concrete layer) is laid; compressed; and leveled at the calculated height. The container and its accessories are placed in the pit. Prior to installation, it should be verified that the container wall is not damaged. The container is filled with water, the pit is filled, and a 300 mm layer of gravel is placed around the container.

The gravel is carefully and gradually compressed without holes and always at a height equivalent to the water level. When installing multiple containers, the space between the containers should be filled as described above.

Safety instructions

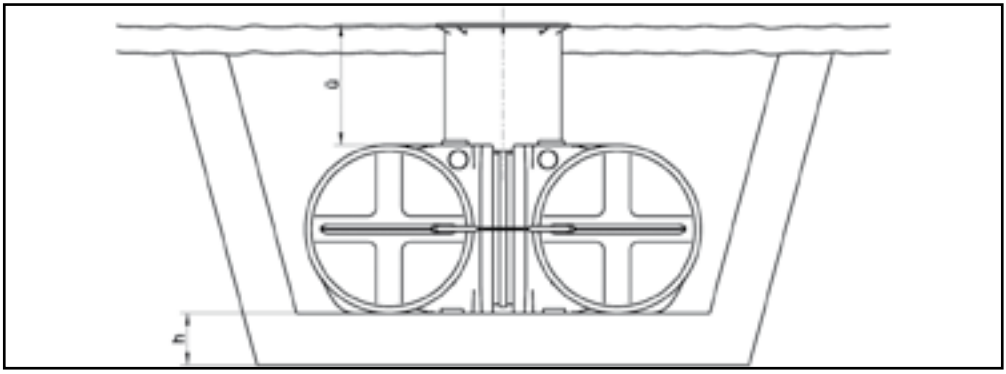
Always make sure to keep the shaft entrance securely locket for child safety. The inside cover serves as an additional safety measure. Do not remove. If it is necessary to enter the container, this should take place in compliance with the applicable accident prevention regulations.



Project Design and Installation

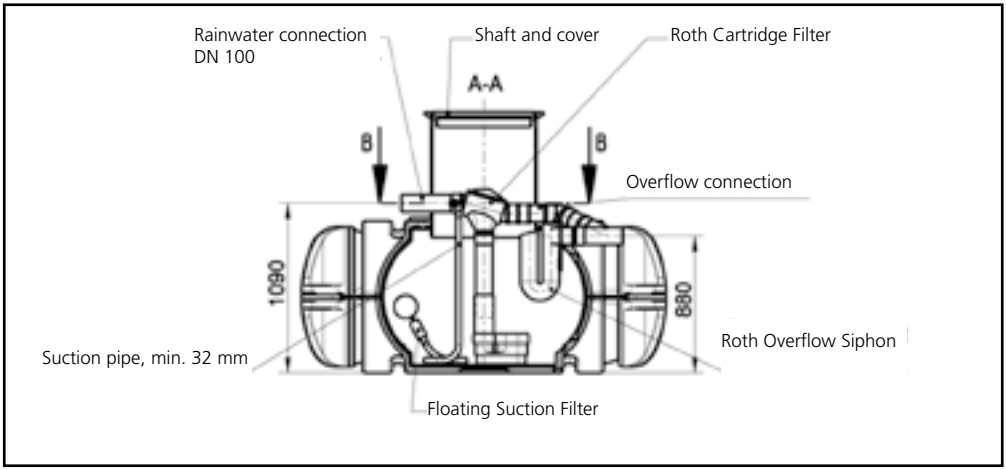
... of Roth Underground Rainwater Tanks

Rainwater Twintanks for underground placement
Measurements in mm



H = Gravel layer compressed, levelled >100 mm
U = Max. 700 mm, with extension max. 1200 mm

Rainwater Twintanks for underground placement



Own Notes

Roth Solar Heating System

Product range

... living full of energy!

Roth Heliostar® Solar Panels

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Heliostar® Solar Panels Frawith polycarbonate construction that ensures shock resistance and high UV and temperature resistance. The highly transparent safety glass ensures high performance.			
	Roth Heliostar® 218 S4 Gross area: 2.18 m² Absorbing area: 1.96 m² Measurements, (length x width x height): 1820 x 1200 x 109 mm Weight: 32 kg	ea.	1	348624.228
	Roth Heliostar® 252 S4 Gross area: 2,52 m² Absorbing area: 2.30 m² Measurements, (length x width x height): 2100 x 1200 x 109 mm Weight: 37 kg	ea.	1	348624.262

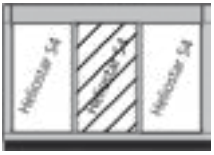
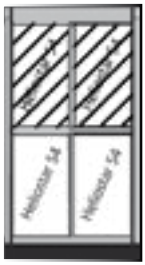
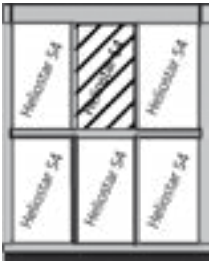
Installation kit for installation on roof

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Heliostar® 218 S4 and 252 S4 Ground kit for vertical (upright) installation on roof The ground kit is for 2 solar panels. Contents: 1/2" transitions, plug, end socket and locking rings for solar panel connection included	kit	1	348624.786
	Roth Heliostar® 218 S4 and 252 S4 Extension kit for vertical (upright) installation on roof Extension kit for 1 solar panel Contents: locking rings for solar panel connection included	kit	1	348624.790
	Roth Heliostar® 218 S4 and 252 S4 Ground kit for horizontal (level) installation on roof The ground kit is for 2 solar panels Contents: 1/2" transitions, plug, end socket and locking rings for solar panel connection	kit	1	348624.784
	Roth Heliostar® 218 S4 and 252 S4 Expansion kit for horizontal (level) installation on roof The expansion kit is for 1 solar panel Contents: locking rings for solar panel connection included	kit	1	348624.794

Installation kit for installation on roof

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Ground Kit roof bracket for vertical (upright) installation on roof For vertical installation of 2 Heliostar® solar panels. Contents: 6 strong roof brackets in stainless steel. Fits most roof coverings.	kit	1	348624.820
	Roth Expansion Kit roof bracket for vertical (upright) installation on roof For vertical installation of additional Heliostar® solar panels. Contents: 2 strong roof brackets in stainless steel. Fits most roof coverings.	kit	1	348624.822
	Roth Ground Kit roof bracket for horizontal (level) installation on roof For horizontal installation of 2 Heliostar® solar panels. Contents: 6 strong roof brackets in stainless steel. Fits most roof coverings.	kit	1	348624.810
	Roth Expansion Kit roof bracket for horizontal (level) installation on roof For horizontal installation of additional Heliostar® solar panels. Contents: 2 strong roof brackets in stainless steel. Fits most roof coverings.	kit	1	348624.812
	Roth Fittings for corrugated sheets etc. Can be used for both horizontal and vertical installation. 4 ea. are needed for the first Heliostar® solar panel and 2 ea. for every additional solar panel.	ea.	1	348624.825

Installation kit for installation on roof

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	RothHeliostar®Ground Kit for integrated, vertical (upright) installation on roof Contents:1/2"transitions, plug, end socket, locking rings for solar panel connection and 2 ea.1.0 metre long flex pipes Minimum roof slope: 22 degrees			
	Roth Heliostar® Ground Kit 218 S4	kit	1	348624.732
	Roth Heliostar® Ground Kit 252 S4	kit	1	348624.730
	**Roth Heliostar® Expansion Kit for integrated, vertical (upright) installation on roof** Contents: locking rings for solar panel connection included			
	RothHeliostar®Expansion Kit 218S4	kit	1	348624.723
	RothHeliostar®Expansion Kit 252S4	kit	1	348624.726
	**RothHeliostar® Expansion Kit above each other (for 2 solarpanels) for integrated, vertical (upright) installation on roof** Contents: 1/2" transitions, plug, end socket and locking rings for solar panel connection included and 2 ea. 1.0 metre long flex pipes			
	Roth Heliostar® Expansion Kit above each other 218 S4	kit	1	348624.724
	Roth Heliostar® Expansion Kit above each other 218 S4	kit	1	348624.727
	**Roth Heliostar® Expansion Kit above each other (for 1 solar panel) for integrated, vertical (upright) installation on roof** Contents: locking rings for solar panel connection included			
	Roth Heliostar® Expansion Kit above each other 218 S4	kit	1	348624.725
	Roth Heliostar® Expansion Kit above each other 218 S4	kit	1	348624.728
	Installation Kit H 252 S4, for roof top, vertical, installation, for 1 panel only, not expandable Contents: 1/2" transitions, plug, end socket, locking rings for solar panel connection and 2 ea. 1.0 metre long flex pipes	kit	1	348624.729

Installation kit for free-standing mounting

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	RothHeliostar® 218 S4 and 252 S4 Ground Kit for vertical (upright), free-standing installation For installation of 1 solar panel for free-standing installation at angles up to 50 degrees Contents: 1/2" transitions, plug, end socket and locking rings for solar panel connection	kit	1	348624.792
	RothHeliostar® 218 S4 and 252 S4 Expansion Kit for vertical (upright), free-standing installation For installation of 1 solar panel for free-standing installation at angles up to 50 degrees Contents: locking rings for solar panel connection included	kit	1	348624.782
	Roth Ground Kit 218 S4 and 252 S4 for horizontal (level), free-standing installation For installation of 1 Heliostar® solar panel for free- standing installation at angles up to 50 degrees. Contents: profile rails, mounting rails, etc.	kit	1	348624.760

Installation kit for panel slope change

	Roth Heliostar® 218 S4 and 252 S4 Ground kit for panel slope change relative to roofslope. Maximum change: 45 degrees. For installation of 1 solar panel Contents: 1/2" transitions, plug, end socket and locking rings for solar panel connection	kit	1	348624.780
	Roth Heliostar® 218 S4 and 252 S4 Expansion kit for panel slope change relative to roofslope. Maximum change: 45 degrees. For installation of 1 solar panel Contents: locking rings for solar panel connection included	kit	1	348624.788

Accessories for Heliostar® solar panel systems

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Solar Panel fluid, Heliostar® Fluid for frost and corrosion protection of the panels. Filling the plastic container with water creates a 40% concentration that protects the panels at temperatures as low as -19° C. (-2.2° F.).			
	10-liter concentrate in a 25-liter container	ea.	1	348620.801
	5-liter concentrate for replenishment	ea.	1	348620.805
	Roth Expansion Container Pre-pressure: 1.5 bar (21.76 PSI) Max. operating pressure 10 bar (145 PSI) Max. operating pressure 120° (248° F.)			
	18 liter Expansion Container	ea.	1	348620.882
	25 liter Expansion Container	ea.	1	348620.883
	33 liter Expansion Container	ea.	1	348620.884
	Roth Pipe Insulation UV-resistant, temperature resistant and aging resistant EPDM pipe insulation. Insulation is 13 mm thick and 10 meters long.	ea.	1	348620.810
	Roth Flex Pipe, 2-in-1 Used for connection between solar panels and container. Contents: flexible pipe in stainless steel with flow and return flow pipes plus a sensor line to the solar panels. 14 mm insulation of synthetic rubber for temperatures between -40°C and +150°C (-400 F. and +302° F.). The sensor line measures 2 x 0.75 mm².			
	Roth Flex Pipe DN 16 15 meter	ea.	1	348620.816
	Roth Flex Pipe DN 20 15 meter	ea.	1	348620.820
	Roth Flex Pipe DN 16 25 meter	ea.	1	348620.116
	Roth Flex Pipe DN 20 25 meter	ea.	1	348620.120
	Roth Flex Pipe DN 16 0,3 meter w/ ½" coupling	ea.	1	348620.216
	Roth Flex Pipe DN 16 1 meter w/ ½" coupling	ea.	1	348620.226
	Roth Installation Kit Complete bearing kit for Flex Pipes. Contents: 4 oval galvanized bearings, plugs, and screws M8 x 80 mm.			
	Roth Bearing Kit for Flex Pipes DN 16	kit	1	348620.826
	Rotb Bearing Kit for Flex Pipes DN 20	kit	1	348620.830
	Roth Connector Kit for Flex Pipes Complete connector kit for Flex Pipes. Contents: 4 connector kits and 2 nipple pipes for DN 16 or DN 20. The connectors fit directly on the solar panels and the solar station.			
	Roth Connector Kit DN 16 (3/4")	kit	1	348620.836
	Roth Connector Kit DN 20 (1")	kit	1	348620.840

Accessories for Heliostar® solar panel systems

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth compensator **For use with systems with more than 5 consecutive panels** 1 kit contains 2 ea.	kit	1	348624.860
	Spareparts for Heliostar S4 **Locking rings**	ea.	1	348624.840
	Transition S4 socket x 1/2" nipple	ea.	1	348624.844
	Transition S4 nipple x 1/2" nipple	ea.	1	348624.846
	End plug	ea.	1	348624.848
	End socket	ea.	1	348624.850
	Roth Filler Pump Circulation pump for filling at solar heat circuit start-up. Pressure height: 35 meters Mains voltage 230V Includes suction hose, pressure hose and filter	ea.	1	348620.815

Accessories for Heliostar® solar panel systems

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Energy Meter for BW/H - BW/H Komfort Measures the energy produced by the solar panels. Attached directly to the control. Contents: volume meter and PT1000 sensor.	ea.	1	348620.881
	Roth 2-way motor valve 1” **Roth 3-way motor valve 1”** Used for switching between production of heat and hot water for domestic use. Attached directly to the control. Consists of a 230 V. motor and a 3-way valve with a 1” ext. thread. Switch time: 10 seconds	ea. ea.	1 1	348620.842 348620.848
	Roth Heat Exchanger 15 kW **Roth Heat Exchanger 30 kW** **Roth Sheet Heat Exchanger 8 kW** Used for pool systems, etc. Operating pressure: max. 30 bar (435 PSI) Operating pressure: max. 225 (437^{O} F.) Connections on sunny side: 1” ext. Connections on pool side: 5/4” ext. Comes with insulation without Freon and screw joints with gasket.	ea. ea. ea.	1 1 1	348621.415 348621.430 348621.408
	Roth Mixing Valve For manual control of mixing temperature of domestic water. For soldering or 22 mm compression assembly. Temperature interval: 35°C - 55°C (95° F. - 131° F.)	ea.	1	348621.850
	Roth Solar Station w/ RS 25/6 pump **Roth Solar Station w/ RS 25/7 pump** Ready assembled unit with valves, pump, thermometer, ventilation, safety devices, manometer, suspension attachment, insulation covering in EPP, etc. The Roth expansion tank fits directly onto the connector hose.	ea. ea.	1 1	348620.920 348620.925
	Electric cartridge 1 1/2” nipple, 6 kW, for Combi Tanks To be screwed directly into the container. **Electric cartridge 1 1/2” nipple, 9 kW, for Combi Tanks** To be screwed directly into the container. **Electric cartridge 180 mm flange, 7.5 kW, for BW/H tanks** To be screwed directly into the container.	ea. ea. ea.	1 1 1	348621.706 348621.712 348621.718

Solar Control for Heliostar® solar panels

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Control Unit BW Electronic control for production of hot water for domestic use. Contents: Works as a control of the pump's rpm, as a container temperature limiter, as an elapsed hour meter, etc. Comes with two PT 1000 sensors. Mains voltage: 230 V Connection for max. 4 sensors and 1 outlet.	ea.	1	348620.901
	Roth Control Unit BW/H Electronic control for production of heat and hot water for domestic use. Contents: Works as a control of the pump's rpm, as a container temperature limiter, as an elapsed hour meter, etc. Comes with three PT 1000 sensors. Mains voltage: 230 V Connection for max. 4 sensors and 2 outlets.	ea.	1	348620.902
	Roth Control Unit BW/H - Komfort Electronic control for production of heat and hot water for domestic use. Contents: Works as a control of the pump's rpm, as a container temperature limiter, as an elapsed hour meter, etc. Comes with three PT 1000 sensors. Mains voltage: 230 V Connection for max. 12 sensors and 9 outlets.	ea.	1	348620.903
	Roth Dip Pipe for PT 1000 sensor Nickel-plated sensor pocket with a length of 60 mm. The dimension is 1/2" ext.	ea.	1	348620.911
	Roth Adapter for PT 1000 sensor Clamp and holder for PT 1000 sensor. Used for fastening PT 1000 sensors onto pipes, etc.	ea.	1	348620.912
	Roth Caterpillar Sensor PT 1000 Temperature sensor PT 1000 with a silicone treated lien for panels and containers. Diameter: 6 mm Length: 2.5 m Temperature limit: max. 180°	ea.	1	348620.910

Tanks for Solar Heating

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Solar Tank 255 liter Comes with solar station, pump, expansion tank, mixing valve, Electric cartridge, Control Unit BW/H and safety valve. Area of solar panel circuit: 0.75 m² Area of heating circuit: 0,75 m² Height: 1840 mm Width: 595 mm Depth: 600 mm Weight: 185 kg	ea.	1	348621.355
	Roth Solar Tank BW 300 litres Storage tank made of enamelled steel with a spiral for a solar circuit, an external heating source, and an optional electric cartridge. The tank comes with a magnesium anode for rust prevention and a dip pipe for a thermometer Used where the solar circuit heats the domestic water. Area of solar panel circuit: 1.52 m² Area of heating circuit: 1.0 m² Connection for electric cartridge: 1 ½" int. Insulation: 50 mm Height 1790 mm Diameter: 610 mm incl. insulation Weight: 131 kg	ea.	1	348621.030
	Roth Solar Tank BW 400 litres Storage tank made of enamelled steel with a spiral for a solar circuit, an external heating source, and an optional electric cartridge. The tank comes with a magnesium anode for rust prevention and a dip pipe for a thermometer Used where the solar circuit heats the domestic water. Area of solar panel circuit: 1.8 m² Area of heating circuit: 1.0 m² Connection for electric cartridge: 1 ½" int. Insulation: 50 mm Height: 1839 mm Diameter: 680 mm incl. insulation Weight: 158 kg	ea.	1	348621.040

Tanks for Solar Heating

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Solar Tank BW/H 750 litres The storage tank is built according to the tank-within-a-tank principle where the enamelled internal tank contains the domestic water. The external tank contains the water for the heating plant. This is also where the spiral for the solar panel circuit is placed. An electric cartridge is an option. The domestic water tank comes with a magnesium anode for rust prevention. It is used where the solar circuit heats the domestic water and contributes to the heating process. Area of solar panel circuit: 2.55 m² Connection for electric cartridge: 1 ½" int. Insulation: 100 mm Height: 1905 mm Diameter: 900 mm incl. insulation Contents: 150 litres. Weight: 218 kg	ea.	1	348621.070
	Roth Solar Tank BW/H 900 litres The storage tank is built according to the tank-within-a-tank principle where the enamelled internal tank contains the domestic water. The external tank contains the water for the heating plant. This is also where the spiral for the solar panel circuit is placed. An electric cartridge is an option. The domestic water tank comes with a magnesium anode for rust prevention. It is used where the solar circuit heats the domestic water and contributes to the heating process. Area of solar panel circuit: 3.15 m² Connection for electric cartridge: 1 ½" int. Insulation: 100 mm Height: 2120 mm Diameter: 990 mm incl. insulation Contents: 200 litres. Weight: 256 kg	ea.	1	348621.100

Tanks for Solar Heating

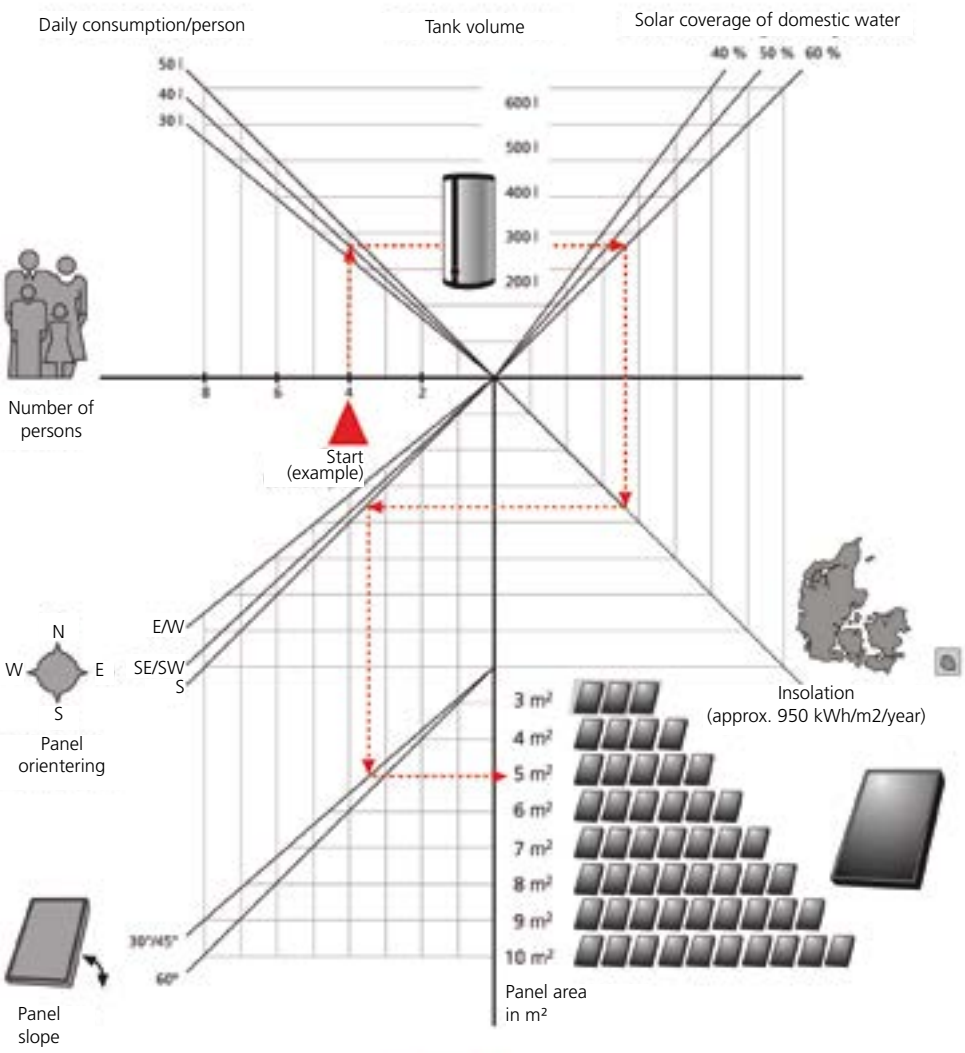
ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Combi Tanks 500 litres The tank features a very special construction, ensuring a layer division that increases the effect on the solar panel circuit. The domestic water is heated in a spiral made of stainless steel according to the flow principle and is thereby replaced faster than, say, mantle tanks. It is used where the solar panel circuit heats the domestic water and contributes to the heating process. Area of solar panel circuit: 2.3 m² Connection for electric cartridge: 1 ½" int. Insulation: 100 mm Height: 1720 mm Diameter: 850 mm incl. insulation Contents: 45 litres. Weight: 112 kg	ea.	1	348621.250
	Roth Combi Tanks 800 litres The tank features a very special construction, ensuring a layer division that increases the effect on the solar panel circuit. The domestic water is heated in a spiral made of stainless steel according to the flow principle and is thereby replaced faster than, say, mantle tanks. The tank has two spirals for the solar panel circuit, which contributes to an increased effect. It is used where the solar panel circuit heats the domestic water and contributes to the heating process. Upper area of solar panel circuit: 2.0 m² Lower area of solar panel circuit: 3.0 m² Connection for electric cartridge: 1 ½" int. Insulation: 120 mm Height: 1930 mm Diameter: 1030 mm incl. insulation Contents: 55 litres Weight 195 kg	ea.	1	348621.280
	Roth Combi Tanks 1000 litres The tank features a very special construction, ensuring a layer division that increases the effect on the solar panel circuit. The domestic water is heated in a spiral made of stainless steel according to the flow principle and is thereby replaced faster than, say, mantle tanks. The tank has two spirals for the solar panel circuit, which contributes to increased effect. It is used where the solar panel circuit heats the domestic water and contributes to the heating process. Upper area of solar panel circuit: 32.0 m2 Lower area of solar panel circuit: 3.5 m2 Connection for electric cartridge: 1 ½" int. Insulation: 120 mm Height: 2110 mm Diameter: 1030 mm incl. insulation Contents: 55 litres Weight 210 kg	ea.	1	348621.300

Complete Solar Heating Systems

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Package 1 (5 m² system with 300 l tank) Contents: 2 ea. Heliostar 252 solar panels á 2.52 m² 1 ea. BW 300 l tank 1 ea. Solar station 1 ea. BW Control Unit 1 ea. Mixing valve 1 kit Mounting kit for rooftop installation 1 kit Roof brackets for tiled roofs 1 ea. 18-litre overflow tank 1 ea. Concentrated solar panel fluid, 10 litres		pck.	3486xx.xxx
	Packet 2 (7.5 m² system with 300 l tank) Contents: 3 ea. Heliostar 252 solar panels á 2.52 m² 1 ea. BW 300 l tank 1 ea. Solar station 1 ea. BW Control Unit 1 ea. Mixing valve 2 kit Mounting kit for rooftop installation (1 ground kit and 1 overflow kit) 2 kit Roof brackets for tiled roofs (1 ground kit and 1 overflow kit) 1 ea. 18-litre overflow tank 1 ea. Concentrated solar panel fluid, 10 litres		pck.	3486xx.xxx
	Package 3 (12.5 m² system with 400 l tank) Contents: 5 ea. Heliostar 252 solar panels á 2.52 m² 1 ea. BW 400 l tank 1 ea. Solar station 1 ea. BW Control Unit 1 ea. Mixing valve 4 kit Mounting kit for rooftop installation (1 ground kit and 3 overflow kit) 4 kit Roof brackets for tiled roofs (1 ground kit and 3 overflow kit) 1 ea. 18-litre overflow tank 1 ea. Concentrated solar panel fluid, 10 litres		pck.	3486xx.xxx
	Package 4 (5 m² system with 255 l tank with integrated solar station) Contents: 2 ea. Heliostar 252 solar panels á 2.52 m² 1 ea. 255 l tank with integrated solar station 1 kit Mounting kit for rooftop installation 1 kit Roof brackets for tiled roofs 1 ea. Concentrated solar panel fluid, 10 litres		pck.	3486xx.xxx

Dimensionering

Nomogram for solar heating of domestic water



The nomogram is for guidance only. It is always a good idea to have an exact calculation made of a planned system. Roth Nordic offers calculations including all data such as savings and reduction of CO_2 emissions. The nomogram is only suitable for domestic water heating and not space heating.

Follow the red arrow when you dimension. The example is for a standard family of 4.

Roth Heliopool™ solar heating system

ITEM	DESCRIPTION	UNIT	PACK	HVAC No.
	Roth Heliopool™ solar panel Heliopool solar panels are used primarily for swimming-pool heating. System configuration is simple and economical since the water circulating in the panels is the pool water. Panel area: 2.22 m²	**1**	ea.	348625.222
	Roth Heliopool™ Installation Kit 2 kits are need for each Heliopool panel	1	ea.	348625.935
	Roth Heliopool™ 25 mm connection kit **Roth Heliopool™ 40mm connection kit**	1 1	kit kit	348625.825 348625.840
	Roth Heliopool™ 25mm plug, kit with 2ea.	1	kit	348625.925

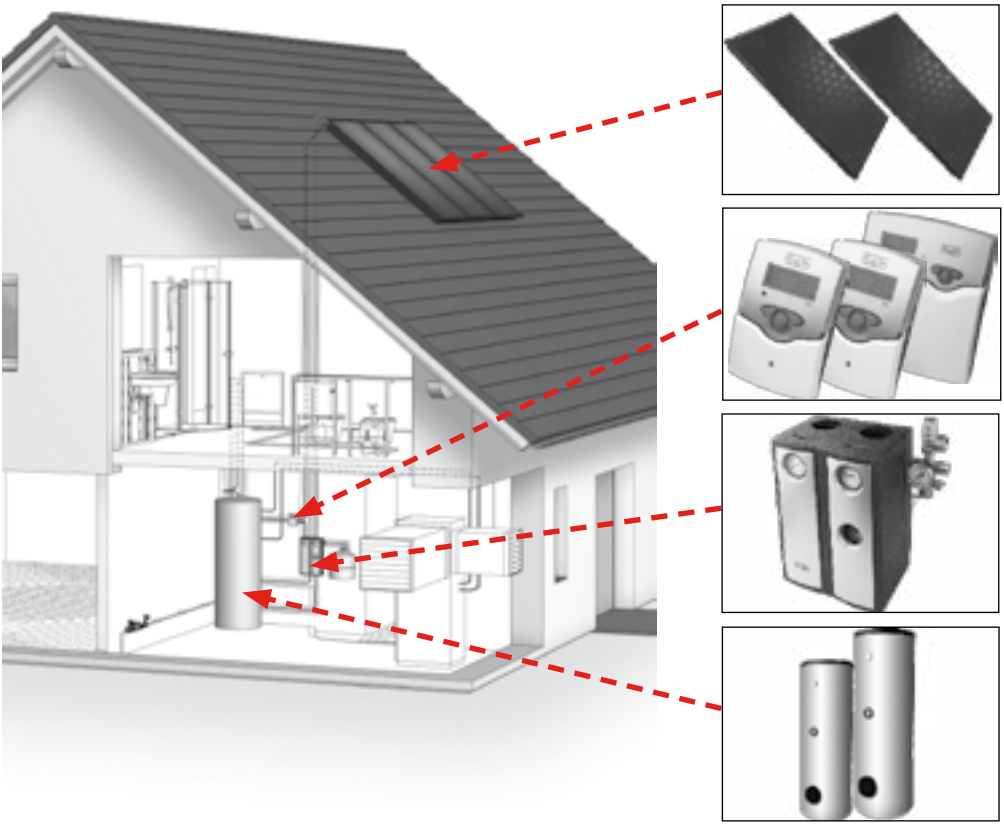
Roth Solar Heating System

Installation, operation, and maintenance

... living full of energy!

Roth Solar Heating

For hot domestic water and space heating



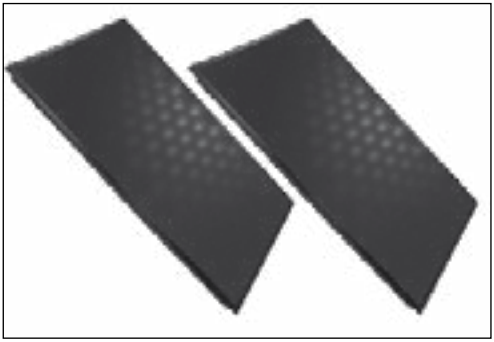
Roth Solar Heating in general

The sun provides the earth with huge amounts of energy. If we could harness the energy transmitted by the sun to the earth for half an hour, we could meet the energy needs of the entire world for a full year. Millions of square metres around the globe are today covered with solar panels and more will come.

Roth has developed high-tech, efficient solar panel systems adaptable to individual needs and installation types. Today, solar panel systems are capable of covering up to two-thirds of hot domestic water consumption, while efficient and customised systems are capable of covering part of the space heating demand.

In all systems, calculation/dimensioning is key to cost-effective and easy installation. Roth always offers to calculate/dimension and configure new solar panel systems to match the system type and size to the task and enable its efficiency to be documented.

Roth Heliostar® S4 solar panels



Roth Heliostar® S4 solar panels are front-line in terms of materials and functional shape. Heliostar® S4 solar panel performance has been documented, and the panels have been awarded the Keymark mark. The frame is solid cast black polycarbonate, i.e. no assemblies exist on the entire frame. This design provides for elegant, safe and maintenance-free solar panel installation. Moreover, polycarbonate has excellent insulating effect thus ensuring the highest efficiency. In addition, polycarbonate is wind, temperature, UV and impact resistant, properties that are the reason for polycarbonate use in, for instance, the aircraft industry.

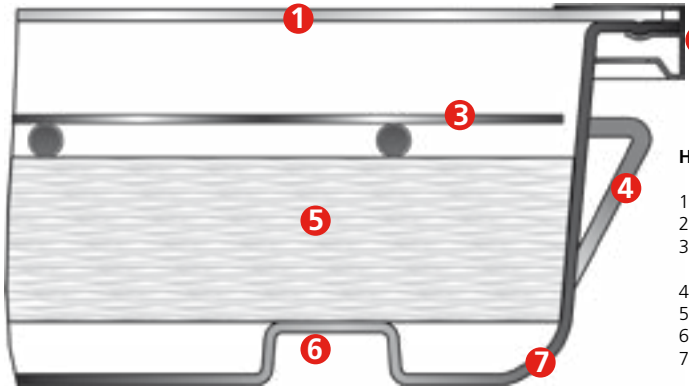
Use of polycarbonate ensures long life spans and avoids corrosion problems even in areas with severe air pollution and aggressive marine environments.

Polycarbonate also contributes towards the low weight of Heliostar, making transport and installation easier – and safer.

Heliostar® S4 solar panels come in two sizes and are thus capable of being adapted to the specific task. Heliostar® 252 S4 has a gross area of 2.52 m² and weighs 37 kg. Heliostar® 218 S4 has a gross area of 2.18 m² and weighs 32 kg. See also the below specification.

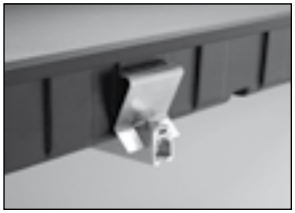
Technical specification of Roth Heliostar® S4 solar panels

	HELIOSTAR® S4 252	HELIOSTAR® S4 218
HVAC no.	348624.262	348624.228
Length	2100 mm	1820 mm
Width	1200 mm	1200 mm
Height	109 mm	109 mm
Gross area	2.52 m²	2.18 m²
Net area	2.30 m²	1.96 m²
Weight	37 kg	32 kg
Solar panel frame	Solid cast polycarbonate frame ensuring corrosion-free installation.	
Solar panel glass	Safety glass with low iron content	
Absorber	Highly-selective coated full-surface absorber	
Absorption	α 95%	α 95%
Emission	ε 5%	ε 5%
Fluid volume	1.16 l	0.86 l
Fluid type	Roth Heliostar solar panel fluid	
Start efficiency:	0.794 m²	0.794 m²
Heat loss coefficient:	3.570W (m²K)	3.570W (m²K)
Heat loss coefficient:	0.0167W (m²K)	0.0167W (m²K)
Angle dependency:	0.92	0.92
Max temp.solar panel:	209°C	209°C
Sensor pocket size	Diam 6 mm (inside)	Diam 6 mm (inside)
Panel connection	½" outside	½" outside
Absorption capacity	Above 525 kWh/m²/year	Above 525 kWh/m²/year



Heliostar® S4 construction

1. Highly transparent safety glass
2. Side view with gasket
3. Full-surface high-performance absorber
4. Integral installation point
5. 50 (60) mm insulation
6. Profiled slot for installation kit
7. Polycarbonate solar panel frame



Keymark
nr. 011-75819F

Advantages of Roth Heliostar® S4 solar panels

Frame
- The polycarbonate frame provides high weather resistance
- Low weight despite large panel areas of 2.18 and 2.52m²
- No leakages due to the solid cast frame and bottom
- Corrosion resistant

High-performing solar panels
- Highly-selective coated full-surface absorber
- Optimum fastening of Cu pipes to absorber plates
- Heliostar® S4 solar panels have been awarded the Keymark

The push joints are rational, lending a superb aesthetic touch

Optimised insolation
- Insulating polycarbonate frame
- 50(60) mm insulation under the absorber plate

Safety glass
- Solar panel glass with low iron content, hail resistant, class 1
- Double proofing at glass/frame

Modern design
- Tube-shaped frame with rounded corners
- Black, adding an elegant and aesthetic touch

Installation advantages
- Low weight, which means easier handling
- Push joints, the panels are simply pushed together

CE

- Panels are joined tightly together to give an elegant and aesthetic look
- Fittings are almost invisible after completion of the installation
- No special tools required
- No sharp edges
- No soldering needed on roof as a connector with gasket is used for connection
- Optional installation integrated in roof, above the roof or as free-standing installation

Roth solar panel control units

BW, BW/H and BW/H Komfort

Roth control unit BW
BW is a microprocessor-controlled temperature difference control unit used where solar heat only heats domestic water.
The control unit has easy-to-use and clearly laid out functions. The illuminated display uses symbols facilitating easy and quick understanding. The control unit allows for automatic or manual control of the solar panel system.

Control unit BW comes with 2 PT-1000 sensors and has 1 output for pump rpm adjustment and 4 ea. sensor inputs.

Roth control unit BW/H
BW/H is a microprocessor-controlled temperature difference control unit used where solar heat heats domestic water and contributes to space heating. Apart from the basic functions, special functions for system optimisation are also available. The control unit provides easy-to-use and clearly laid out functions. The illuminated display uses symbols facilitating easy and quick understanding.

Control unit BW/H comes with 3 ea. PT-1000 sensors and has 1 output for pump rpm adjustment and an on/off output. The control unit has 4 sensor inputs as well as an impulse input for energy meter.

Roth Control unit BW/H Komfort
BW/H Komfort is a microprocessor-controlled temperature difference control unit used where solar heat heats domestic water and contributes to space heating. Apart from the basic functions, special functions for system optimisation are also available. The control unit provides easy-to-use and clearly laid out functions. The illuminated display uses symbols facilitating easy and quick understanding. Adjustment values and operating data can be read via a computer.

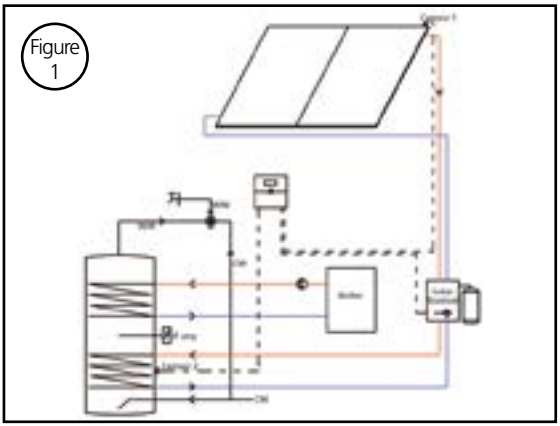
The control unit BW/H Komfort comes with 3 ea. PT-1000 sensors and has 12 sensor inputs of which 2 ea. are impulse inputs, 1 ea. is for additional solar sensor and 9 relay outputs are for pump control, boiler control, etc.

Roth 255 L solar heating tank placed in the utility room.

System configuration examples

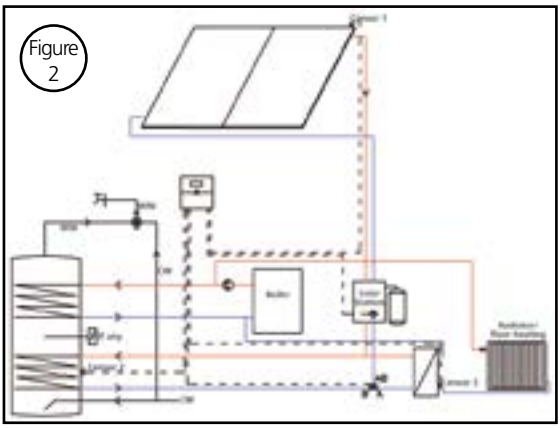
Below, various examples of different system configurations and control options are shown. Roth solar panel adjustments allow for a vast number of additional solar panel controls.

Figure 1



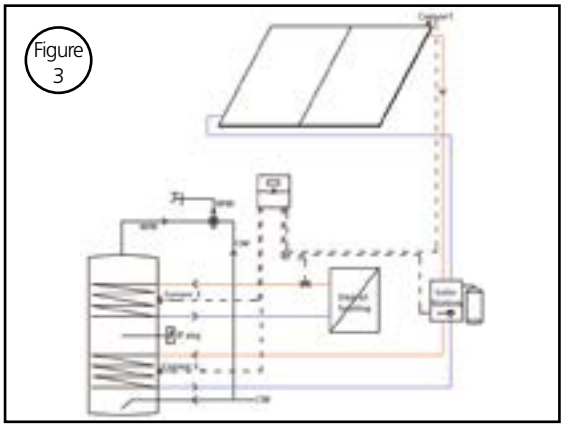
System configuration 1 (possible with both BW and BW/H). Control is used only on the solar heating system.

Figure 2



System configuration 5 in the BW/H control
Here, excess heat is used for space heating via heat exchanger (return heating).

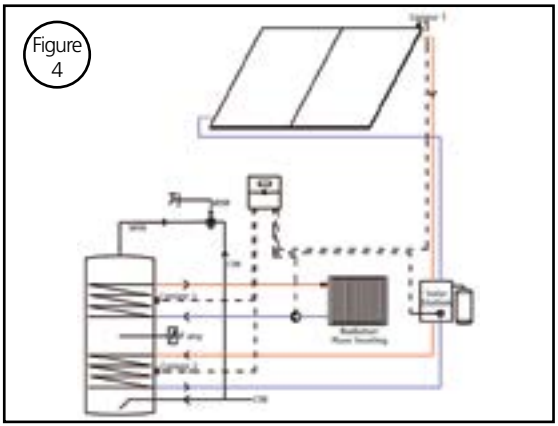
Figure 3



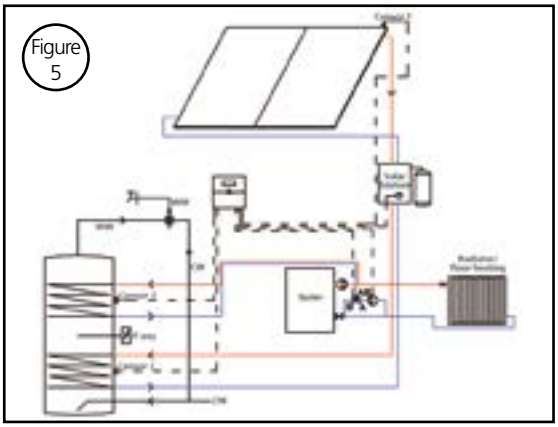
System configuration 3 in the BW/H control
Here, district heating or boiler supplement to the solar heating tank is controlled by the solar heating control unit.

System configuration examples

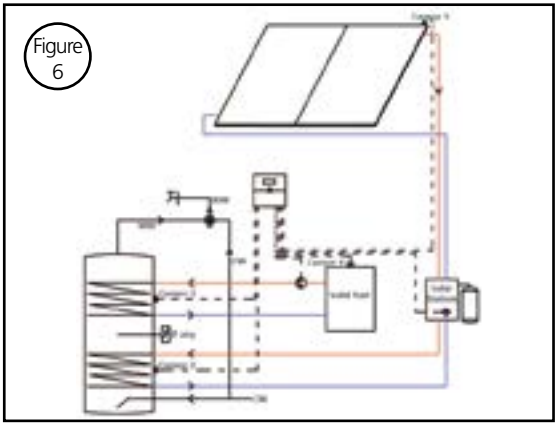
Below various examples of different system configurations and control options are shown. Roth solar panel adjustments allow for a vast number of additional solar panel controls.



System configuration 3 in the BW/H control
Here, excess heat is used for space heating without exchanger.



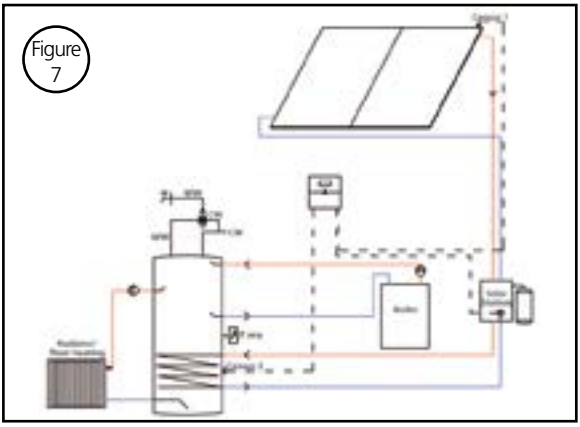
System configuration 3 in the BW/H control
Excess heat is used for space heating and is taken from the top spiral of the tank.



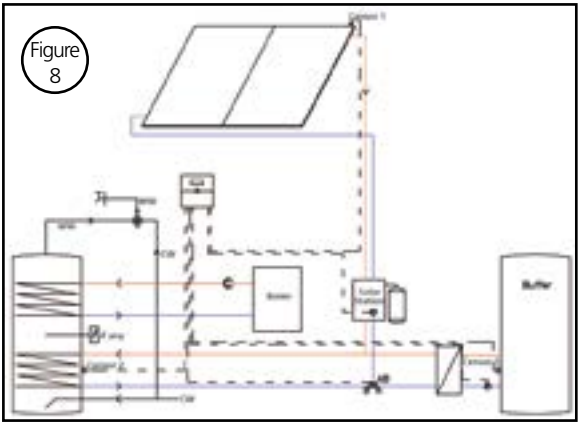
System configuration 8 in the BW/H control
Here, the solid fuel boiler supplement to the solar heating tank is controlled by the solar heating control unit.

System configuration examples

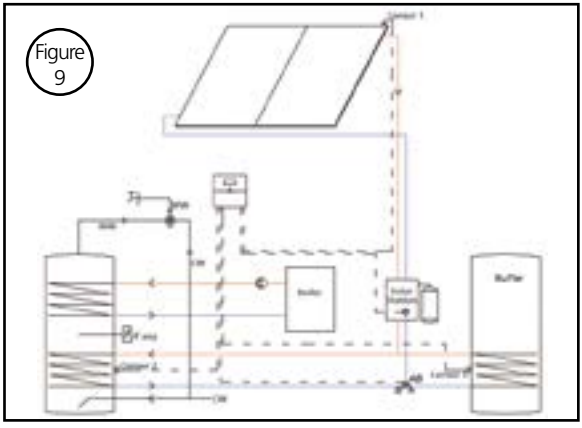
Below various examples of different system configurations and control options are shown. Roth solar panel adjustments allow for a vast number of additional solar panel controls.



System configuration1 (possible on both BW and BW/H)
Here, all solar energy is carried to the container. The heating system may be supplied directly from the tank.



System configuration 5 in the BW/H control
Here, excess heat is used for, e.g., space heating via exchanger and buffer container.

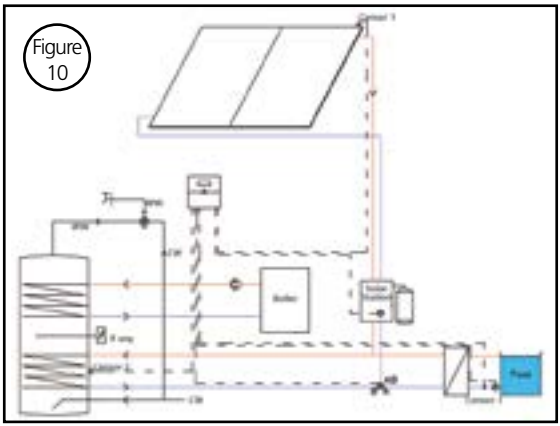


System configuration 5 in the BW/H control
Here, excess heat is used for, e.g., for space heating via buffer tank.

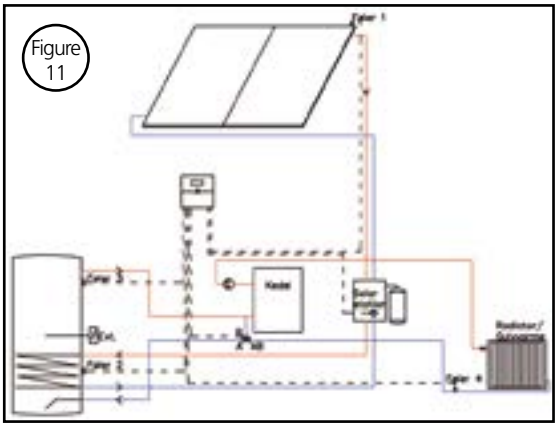
System configuration examples

Below various examples of different system configurations and control options are shown.

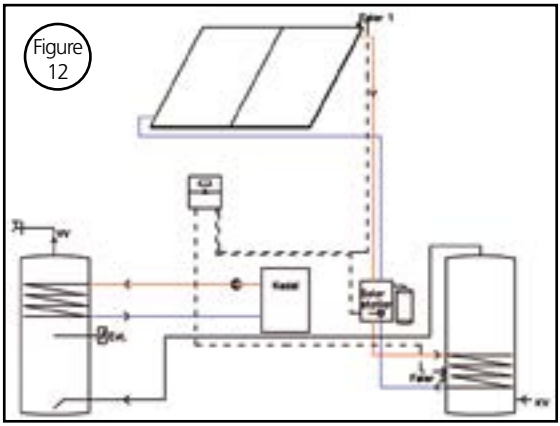
Roth solar panel adjustments allow for a vast number of additional solar panel controls.



System configuration 5 in the BW/H control
Here, excess heat is used for pool heating via heat exchanger.



System configuration 9 in the BW/H control
Here, all solar energy is used for space heating (return heating).



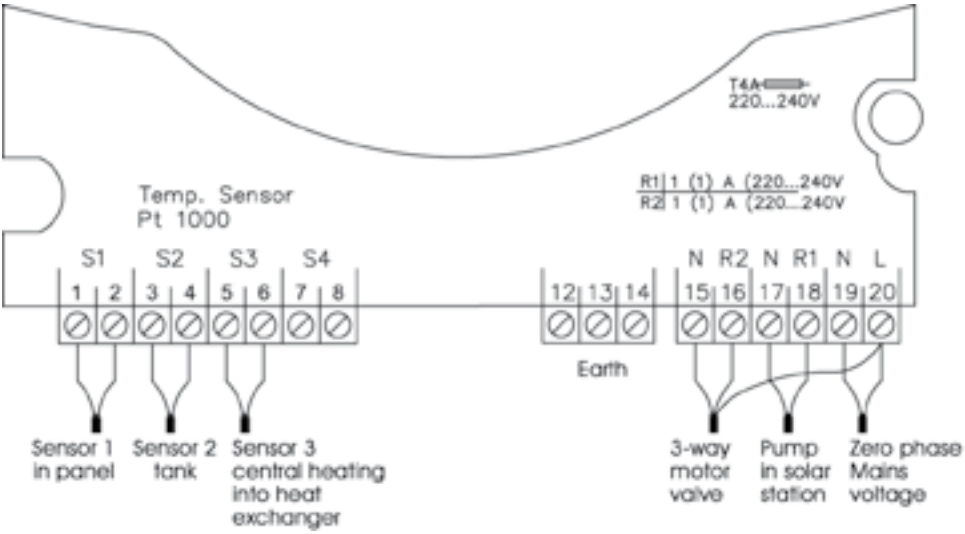
System configuration 1 (possible with BW and BW/H)
Here, the solar energy is used for domestic water pre-heating.

Connecting Roth Solar Heating Controls

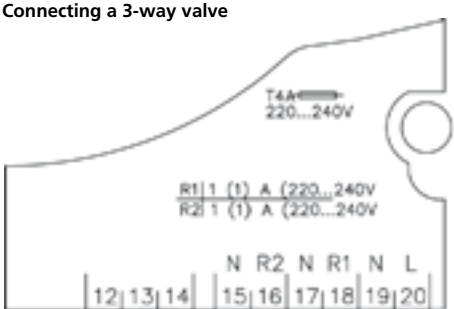
Roth solar heating control units are simple and easy to use, both in terms of connecting and use. The control units feature several ready-made system configurations to choose from. Please see the configurations elsewhere in the handbook. Please contact Roth if you need another pipe or system configuration than what is shown here.

Below follows an example of power connections on the BH/W control unit. The example shows system configuration 5 where solar heat primarily heats the hot water tank and leads any excess heat into the central heating system via a heat exchanger. See figure 2 in the section: Examples of system configurations.

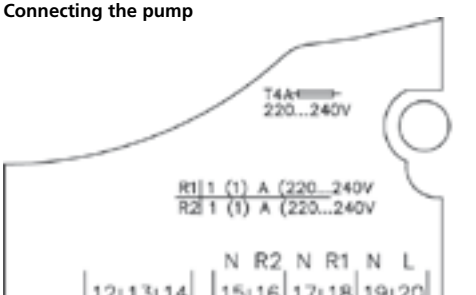
The earth terminal is not shown in the drawing, but must of course be used in practice.


T4A
220...240V
Temp. Sensor
Pt 1000
R1 1 (1) A (220...240V
R2 1 (1) A (220...240V
S1 S2 S3 S4
1 2 3 4 5 6 7 8
N R2 N R1 N L
12 13 14 15 16 17 18 19 20
Earth
Sensor 1 in panel
Sensor 2 tank
Sensor 3 central heating into heat exchanger
3-way motor valve
Pump in solar station
Zero phase Mains voltage

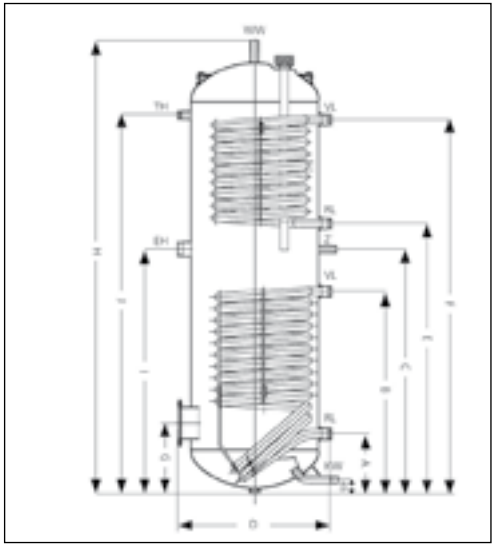
Connecting a 3-way valve



Connecting the pump



Roth Solar Heating Tanks
BW 300/400



Roth provides three different-sized tanks forsolar heating. This means that we can customise the tank type and size to the system in question. All connectors are individual and identified by the manufacturer. An optional electric cartridge can be fitted on all tanks.

BW 300/400 is used where domestic water is heated by the solar circuit alone. The tank size fits most families' hot water consumption.

Naturally, any excess heat can via, e.g., exchangers be transmitted to space heating; see configurations elsewhere in the handbook.

The tank is made with 1 spiral for a solar circuit at the bottom and 1 spiral for boiler water at the top. On the inside, the tank is enamelled in accordance with DIN4753 and comes with a magnesium anode for rust protection.

The tank pipe connectors are easy to install and require no additional fittings. The tank comes with 1 thermometer, 1 inspection flange and 1 insulation cap for the flange. To ensure easy and safe installation, adjustable legs are included.

To minimise heat loss, the tank comes with an efficient 50 mm PU insulation which covers the entire tank and provides superb finish.

Technical specifications for BW 300/400

	300	400
HVAC no.	348621.030	348621.040
Content, domestic water	300 l	400 l
Weight	131 kg	158 kg
Measurements, see drawing		
A = Return, solar heat1"	263 mm	320 mm
B = Flow, solar heat1"	836 mm	880 mm
C = Circulation for DW	963 mm	1000 mm
D = Diameter	610 mm	680 mm
E = Return, boiler supp.1"	1083 mm	1100 mm
F = Flow, boiler supp.1"	1443 mm	1460 mm
G = Inspection flange	305 mm	345 mm
H = Height/Hot DW 1"	1790 mm	1839 mm
I = Electric cartridge 1½"	983 mm	983 mm
J = Thermometer	1507 mm	1521 mm
KW = Cold DW 1"	85 mm	85 mm
Heat loss per 24 hours	2,3 kW/h	2,5 kW/h
Operating pressure, max.	10 bar	10 bar
Test pressure, max.	15 bar	15 bar
Operating temp. tank, max.	95 °C	95 °C
Operating temp. spirals, max.	110 °C	110 °C
Spiral area, boiler supplement	1,0 m²	1,0 m²
Spiral area, solar heating	1,5 m²	1,8 m²

Roth Solar Heating Tanks
Cabinet model 255

The cabinet model is used where domestic water is primarily heated by solar heating, but is easily expandable to supplement, for example, space heating. The tank fits most families' hot water consumption.

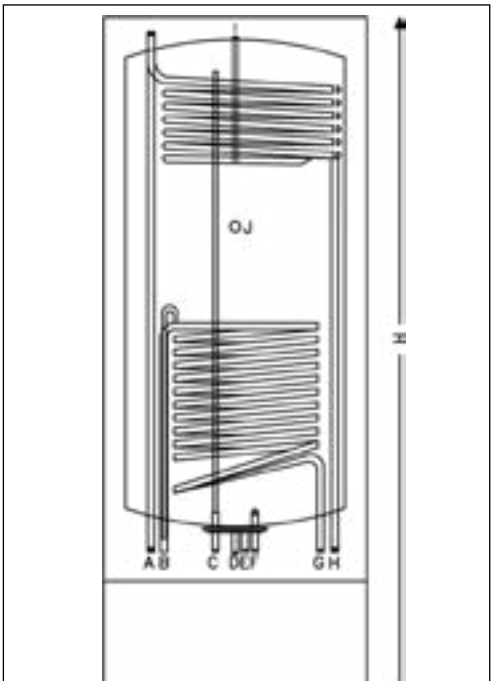
This tank has 1 spiral for solar heating at the bottom and 1 spiral for heating supplement from boiler etc. at the top. In addition, it comes with an adjustable electric cartridge.

On the inside, the tank is enamelled and comes with a sacrificial anode for rust protection.

All pipe connectors are placed at the tank bottom, which adds a fine aesthetic touch since all pipes will be hidden by the steel cabinet. The tank comes with an integrated BW/H control unit to ensure reliability and optimise system economy.

The tank is supplied complete with ready-mounted solar station, including pump, mixing valve, expansion tank (for 2 panels), manometer, check valve, safety valve, etc.

All internal pipe and power connectors on the tank are ready for use, which allows for easy and problem-free installation.



Technical specifications for cabinet tank 255 L

HVAC no.	348621.355
Content, domestic water	255 l
Weight	185 kg
Measurements, see drawing	
A = Flow, boiler supplement¾"	situated at bottom
B = Flow, solar heating15mm comp.	situated at bottom
C = Hot DW22mmcomp.	situated at bottom
D = Sensor, solar heating	situated at bottom
E= Cold DW 22 mm comp.	situated at bottom
F = Return, solar heating 15 mm comp.	situated at bottom
G = Return, boiler supplement ¾"	situated at bottom
Height	1840 mm
Width	595 mm
Depth	600 mm
Colour	white-enamelled
Operating pressure, tank, max	10 bar
Operating pressure, spirals,max	6 bar
Operating temperature, max	85°C
Spiral area, solar heating	0.75 m²
Spiral area, boiler supplement	0.75 m²
Expansion tank Volume	8 litres
Power connection on control unit	230V
Power connect., elect. cartridge (1or3kW)	230 or 400V

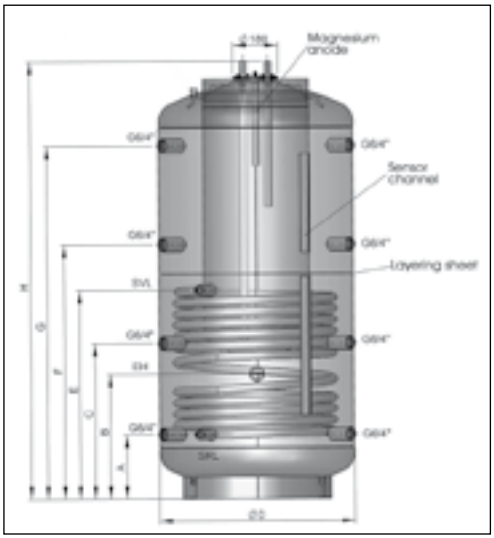
Roth Solar Heating Tanks
BW/H 750/900

BW/H 750/900 is built according to the tank-within-a-tank principle, enabling storage of large energy amounts in the form of hot domestic water and hot central heating water.

The tank consists of 2 tanks, the internal one containing the domestic water and the external one the central heating water. This ensures large domestic water capacity and, at the same time, an acceptable level of replacement of domestic water.
The internal tank is enamelled on the inside and comes with a magnesium anode for rust protection.

To minimise heat loss, the tank comes with an efficient 100 mm foam insulation which covers the entire tank and provides a beautiful finish.

To obtain the optimum sensor location in each individual system, 2 double sensor channels are welded onto the tank.

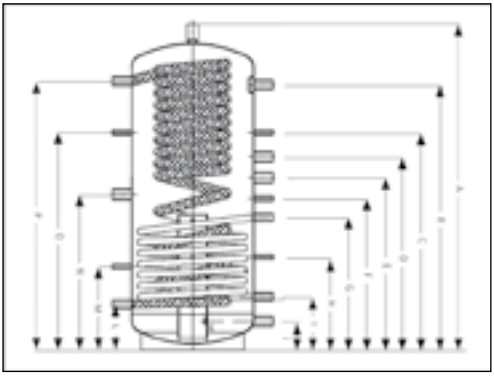


Technical specifications for BW/H 750/900

	750	900
HVAC no.	348621.070	348621.100
Content, cent. heating water	600 l	700 l
Content, domestic water	150 l	200 l
Height, incl. insulation	1800 mm	2150 mm
Diameter, incl. insulation	990 mm	990 mm
Diameter, excl. insulation	790 mm	790 mm
Weight	200 kg	234 kg
Measurements, see drawing		
A = Return, space heating 1½"	260 mm	310 mm
B = Elec. cartridge 1½"	505 mm	555 mm
C = Return, boiler supp.1½"	630 mm	745 mm
E = Flow, solar heating 1"	845 mm	1030 mm
F = Flow, space heating1½"	1030 mm	1250 mm
G = Flow, boiler supp.1½"	1430 mm	1710 mm
H = Dom. water cold/hot/circ. ¾"	1773 mm	2123 mm
K = Return, solar heating1"	260 mm	310 mm
Ventilation in tank top	½"	½"
Operating pressure, int. tank, max	10 bar	10 bar
Test pressure,internal tank, max	15 bar	15 bar
Operating pressure, ext. tank, max	3 bar	3 bar
Operating temperature, tank, max	95°C	95°C
Operating temperature, spiral, max	110°C	110°C
Spiral area, solar heating	2.4 m²	3.0 m²
Solar heating spiral content	15.6 l	19.3 l

*A, C, F and G may of course also be used for other purposes than those shown here

Roth Combi Tanks 500/800/1000



The Combi Tank500/800/1000 has a spiral for domestic water, which is heated according to the flow principle. This way the water is replaced fasterthan in, for example, mantle tanks and the legionella-free hot water is produced according to DVGW551concerning continual replenishmentof fresh domestic water.

The Combi Tank800/1000 has 2 spirals for the solar panel circuit, which optimises the use of solar heating, controlled by the current panel temperature.The Combi Tank500has one spiral.

The Combi Tank is the universal tank for optimising the solar heating system. There are a number of hydraulic connection options to allow optimisation of solar heating and the supplementary source of heat.

To minimise heat loss, the tank comes with an efficient 100mm(for500l) and120mm(for800 and1000l) foam insulation which covers the entire tank and provides a nice finish.

Technical specificationsfor Combi Tank 500

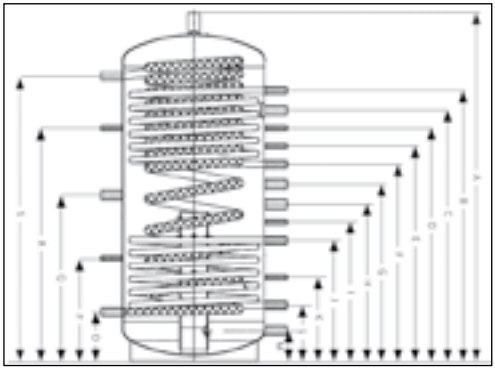
HVAC no.	348621.250
Content,total	488 l
Content,central heating water	443 l
Content, domestic water	45 l
Weight	112 kg
Diameter excl. insulation	650 mm
Diameter incl. insulation	850 mm
Height excl. insulation	1640 mm
Height incl. insulation	1720 mm
A = Ventilation 1"	1720 mm
B = Flow, boiler supplement 1½"	1400 mm
C = Sensor, supp. heating ½"	1150 mm
D = Flow, space heating 1½"	1020 mm
E = Return, boiler supp. 1½"	910 mm
F = Sensor ½"	800 mm
G = Flow, solar heating 1"	700 mm
H = Sensor, solar heating ½"	490 mm
I = Return, solar heating 1"	280 mm
J = Return, space heating 1¼"	150 mm
K = Feeding pipe 1¼" (if necessary, for return, space heating)	150 mm
L = Cold DW 1¼"	240 mm
M = Available ½"	440 mm
N = Electric cartridge 1½"	820 mm
O = Available ½"	1150 mm
P = Hot DW 1¼"	1420 mm
Tank material	St 37.2
Domestic water spiral	V4A
Spiral area,solar heating	2.3m²
Content,solar heating spiral	12 l
Operating pressure, tank,max.	3 bar
Operating pressure, solar heating spiral,max.	6 bar
Operating pressure, DW spiral,max.	10 bar
Operating temperature, max.	95°C

* B, D, E and J may of course also be used for other purposes than those shown here

Roth Roth Combi Tanks 500/800/1000

Technical specificationsfor Combi Tank 800/1000

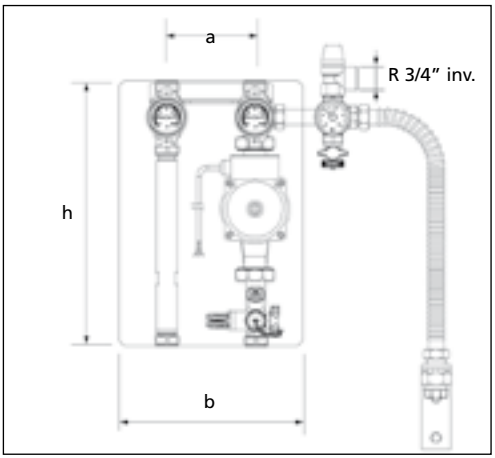
	800	1000
HVAC no.	348621.280	348621.300
Content,total	805 l	897 l
Content, central heating wat.	750 l	842l
Content, domestic water	55 l	55 l
Weight	195 kg	210 kg
Diameter excl. insulation	790 mm	790 mm
Diameterincl. insulation	1030 mm	1030 mm
Height excl. insulation	1830 mm	2010 mm
Height incl. insulation	1930 mm	2110 mm
A = Ventilation 1"	1930 mm	2110 mm
B = Flow, solar heating, upper spiral1"	1500 mm	1680 mm
C = Flow, boiler supp.1½"	1390 mm	1520 mm
D = Sensor, solar heat, upper½"	1290 mm	1450 mm
E = Sensor,supp. heat½"	1190 mm	1330 mm
F = Return, solar heat, upperspiral1"	1090 mm	1210 mm
G = Flow,space heating 1½"	980 mm	1060 mm
H = Return, boiler supp.1½"	870 mm	950 mm
I = Available ½"	770 mm	840 mm
J = Flow, solar heat, lower spiral 1"	670 mm	730 mm
K = Sensor, solar heat, lower spiral ½"	465 mm	495 mm
L = Return, solar heat, lowerspiral 1"	310 mm	310 mm
M= Return, space heating 1½"	170 mm	170 mm
N = Feeding pipe 1½" (if necessary, for return, space heating)	170 mm	170 mm
O = Cold DW 1¼"	270 mm	270 mm
P = Available ½"	570 mm	580 mm
Q = Electric cartridge 1½"	920 mm	1130 mm
R = Available½"	1290 mm	1760 mm
S = Hot DW1¼"	1580mm	1760mm



Tank material	St37.2	St37.2
Domestic water spiral	V4A	V4A
Spiral area, solar heating, upper	2.0m²	3.0m²
Content, solar heating spiral, upper	16 l	18 l
Spiral area, solar heating, lower	3.0m²	3.5m²
Content, solar heating spiral, lower	11 l	16 l
Feeding pipe	St37.2	St37.2
Operating pressure, tank, max	3 bar	3 bar
Op. pressure, solar heating spiral, max	6 bar	6 bar
Operating pressure, DW spiral, max	10 bar	10 bar
Operating temperature, max	95ºC	95ºC

*C. G ,H and M may of course be used for other purposes than those shown here

Roth Solar Heating Systems Solar Station

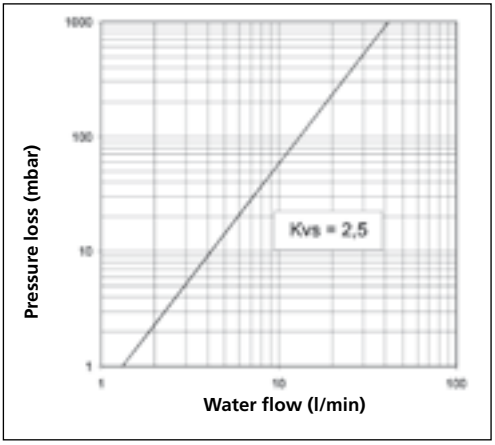


Roth Solar Station

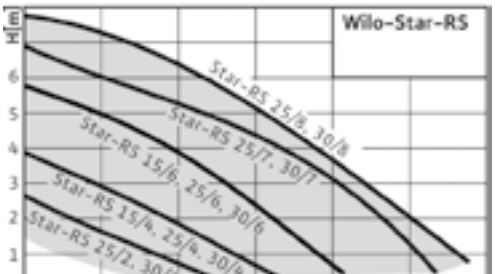
Technicalspecificationsfor the Roth Solar Station

Characteristics	Specifications	
Dimension	RS25/6	RS25/7
HVAC no.	348620.920	348620.925
Valves and joints	Brass	
Gaskets	EPDM/teflon	
Insulation	EPP, multi-part	
Pressure, max.*)	10 bar at 100°C	
Safety valve	6 bar and manometer 10 bar	
Temperature, max.	Continual100°C/ Short-term 120°C	
Flow meter	2-16 l/min equivalent to 40-50% glycol mixture	
Shut-off valves	2 with integrated thermometer on flow/return	
Pump performance	See pump curve	
Connection	4x22 mm, 18 mm CU clamp joints	
C/Cat connections (a)	125mm	
Insulation width (w)	250mm	
Insulation height(h)	350mm	
Length of pipe for expansion tank	480mm	

*) without safety valve



Pressure loss diagram Roth Solar Station



Roth Solar Station

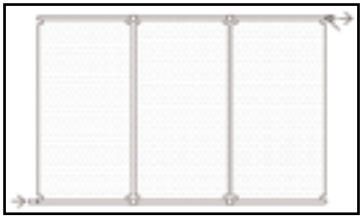
- Integrated filler and drain valves
- All materials are tested for use in solar heating systems
- Integrated flow meter and flow control
- Suspension attachment
- Insulation cover
- Safety device
- Thermometer on flow/return

Roth Solar Heating Systems Heliopool

Roth Heliopool is used for swimming pool heating. System configuration is simple and economical since the water circulating in the panels is the pool water. This means no installation and maintenance of plate exchangers etc. See system configuration examples at the bottom of this page. Figure1 is a BW control system and figure 2 a BW/H control system. As a general rule, the Heliopool panel area must correspond to 70% of the pool area.
Example:24 m² pool – 70% of 24m² = around 17 m² = 8 Heliopool

Vertical installation

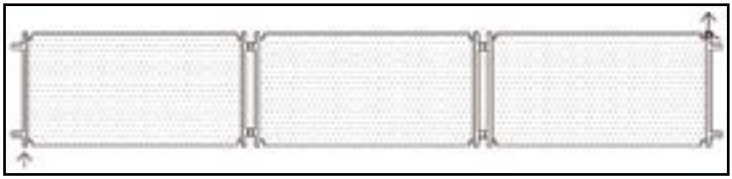
No. of connector kits and installation kits for vertical installation



Materials required
No. of 40 mm connector kits = no. of panels
No. of 25 mm plugs, kits = no. of panels x2
No. of installation kits = no. of panels x2

Horizontal installation

No. of connector kits and installation kits for horizontal installation



Materials required
No. of 40 mm connector kits = 1
No. of 25 mm connector kits = no. of panels-1
No. of 25 mm plugs, kits = 2
No. of installation kits = no. of panels x 2

Examples of Heliopool use

Figure 1

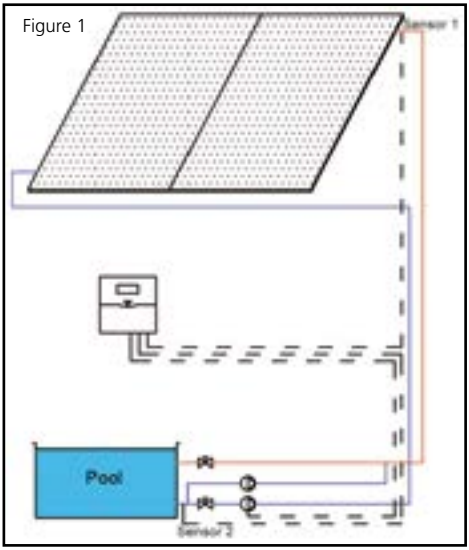
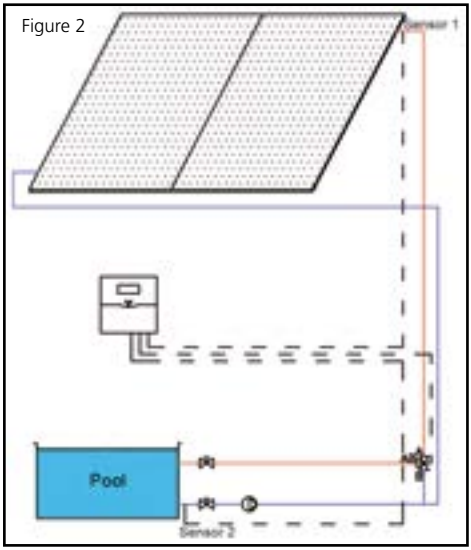


Figure 2

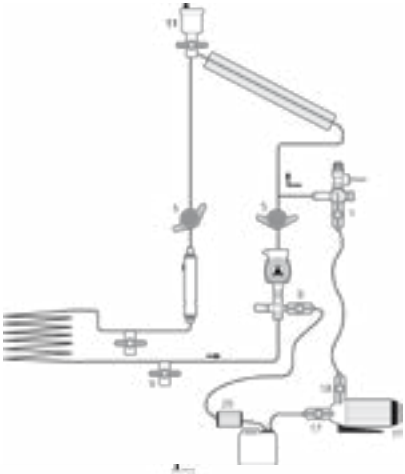


Roth Solar Heating Systems – Start-up

- Making sure that the expansion tank has the right pressure

Flushing the solar heating system (illustration 1)

- The solar heating system should always be flushed with water.
- The flushing must include panels, the solar station, and the tank.
- Be aware of the burn risk if the panel temperature exceeds 60° C. (140° F.).
- You may want to cover the panels if the water reaches high temperatures during the flushing.
- Make sure that the filler pump does not run dry.
- Use a filter (20)

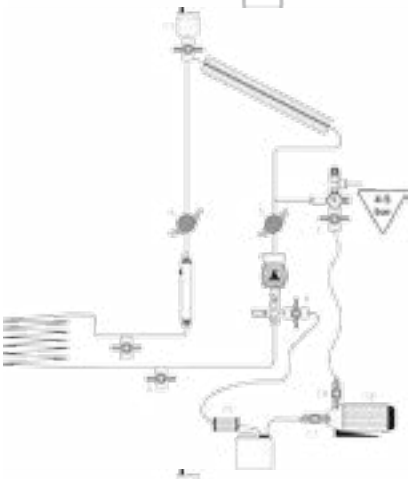


Instructions

- Open valves (1) and (8)
- Set valve (6) to 45°
- Set valve (5) to a horizontal position
- Close valve (11) if installed
- Install the pump and begin flushing

Pressure testing (illustration 2)

- Check all assemblies for leaks
- If flushing takes place with water, secure the system with solar fluid to prevent frost damage.
- Pressure testing may be perforwith with a pressure of up to 5 bar (72.5 PSI)
- Variations in pressure may occur if the panels are affected by the sun
- Disconnect the expansion tank during pressure testing

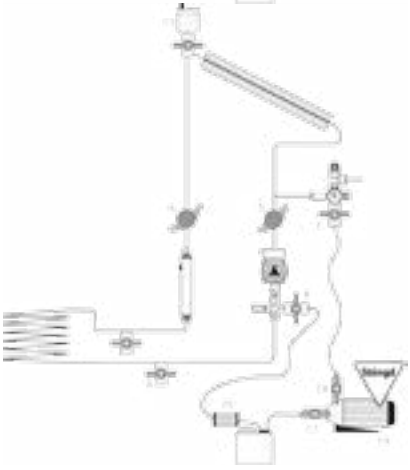


Instructions

- Close the drain valve (8)
- Once the test pressure is achieved, close the filler valve (1)
- Set valves (5) and (6) to 45o
- Close the valves (11) so that ventilation will not interfere with the pressure test

Draining (illustration 3)

- Not needed if the system is already filled with solar fluid



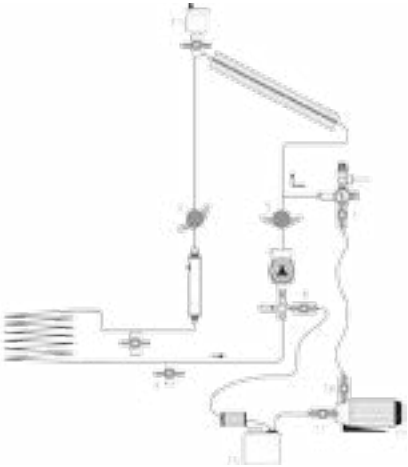
Instructions

- Close the filler pump (19)
- Remove the hose from the drain valve (8) and attach it to the drain valve (9)
- Open the drain valve (9)
- Open the filler valve (1)

Roth Solar Heating Systems – Start-up

Filling with solar fluid (illustration 4)

- At this point, fill the system with solar fluid and remove all air from the system

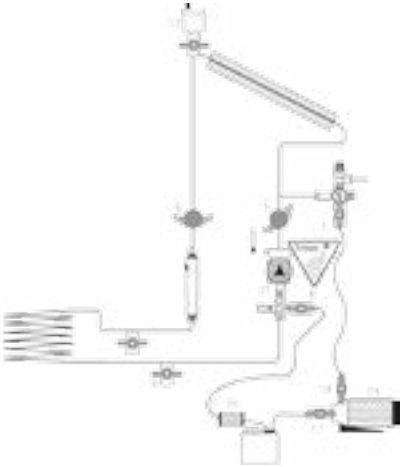


Instructions

- Attach the filler hose to valve (1) and the drain hose to valve (8)
- Open valves (8) and (1)
- Set valve (5) to a horizontal position
- Close valve (11)
- Start up the filler pump (19)
- Let the pump run until no more air enters the solar fluid container (16)
- Ventilate the system pumps
- Close drain valve (8)
- When the desired operating pressure is achieved, close the filler valve (1)
- Open valve (11) if automatic air escapes are installed on the panels

Ventilating the solar station (illustration 5)

- Set valve (6) in a horizontal position and valve (6) at 45o
- Run the filler pump for about 20 seconds
- Close the drain valve (8) and the filler valve (1)



Ventilating the solar station pump

- Set the pump at the highest rpm and ventilate using the screw on the front of the pump. Otherwise follow the pump manufacturer's instructions.

Tip!

- Flush the system at high pressure, 304 bar (43.5 - 58 PSI).
- You can run the pump a couple of times to accelerate the ventilation itself.
- You may want to close valve (8) for shorter periods of time during flushing. This way the pressure is increased and the ventilation can be accelerated.
- If necessary, the pump direction can be changed in such a way that the ventilation of the container exchanger is optimized.

Roth Solar Heating Systems – Start-up

Setting the system pressure

- The expansion tank must have the correct pre-pressure prior to installation. See the schedule for recommended min. pressure and the recommended pre-pressure for the expansion tank.
- After a few days of operation, the system pressure may change due to changes in temperature and ventilation.

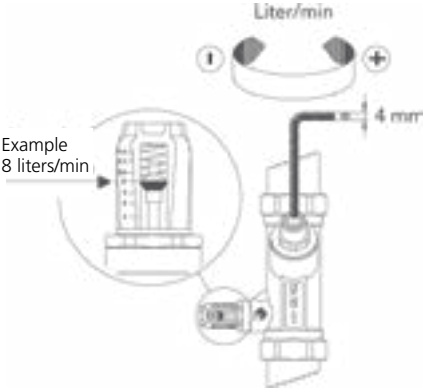
Recommended system pressure		
System height (m)	Pre-pressure in expansion tank (bar)	System pressure (bar)
5	0,6 - 0,7	0,7 - 0,8
8	0,9 - 1,0	1,0 - 1,2
10	1,2	1,2 - 1,3
15	1,7	1,7 - 1,8
20	2,3	2,3 - 2,5

Tip!

- When the system is filled, the pressure should be 0.1 - 0.2 higher than what is indicated in the schedule.

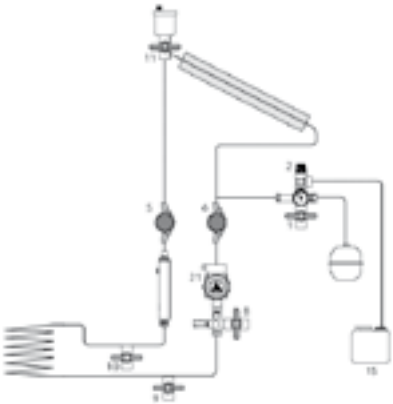
Regulating the water amount (the flow above the solar panels)

- Fully open the control valve in the solar station (use a 4 mm Allen key)
- Set the pump on the solar station on the lowest level
- Set the performance of the control unit to 100%
- The recommended flow is 40 liters/m2/h
- Example: Installed 12 m² solar panels, 40 l/rm/h x 12 m²: 60 min/h = 8 l/min
- Select a pump speed that gives the estimated water amount



When the system is on

- Set all valves as shown in the illustration
- Place an empty container (16) below the pipe from the safety valve (2) so that any solar fluid is retrieved



Roth Solar Heating System - Information Form

Please feel free to fill in the form and send it to Roth Nordic A/S

1. Direction of the solar panel?
Which corner do the panels face?
Please give your answer!

☐ N ☐ NE ☐ E ☐ SE ☐ S ☐ SW ☐ W ☐ NW

2. Slope of the solar panel?
At what slope can the panels be installed?

☐ 0° ☐ 10° ☐ 20° ☐ 30° ☐ 40° ☐ 45°
☐ 50° ☐ 60° ☐ 70° ☐ 80° ☐ 90°

3. Number of family members? ☐

4. How hot would you like your hot domestic water to be?

☐ 40° ☐ 45° ☐ 50° ☐ 55° ☐ 60°

5. What kind of supplementary heating do you have?

☐ Oil boiler ☐ Electric boiler ☐ District heating
☐ Solid fuel boiler ☐ Gas boiler

6. Size of house? ☐

7. Insulation level of the house?

☐ Well-insulated! ☐ Less well-insulated!

8. Function of the solar panels?
What is the purpose of the panels?

☐ Domestic water! ☐ Domestic water / heating system!

9. Current heating requirement in kWh? ☐
Please state your estimated heating requirement, if possible!

10. Current heating system?

☐ Floor heating! ☐ Radiators!
☐ Combined floor and radiator heating ☐ Requirement to flow temperature!

11. Installation of solar panels?

☐ On the roof! ☐ Integrated into the roof!
☐ Free-standing! ☐ Changed slope of panels!

Customer name: .....

Address: .....

Postal code and town: .....

Phone: ..... **Mobile phone:** .....

Fax: ..... **Email address:** .....

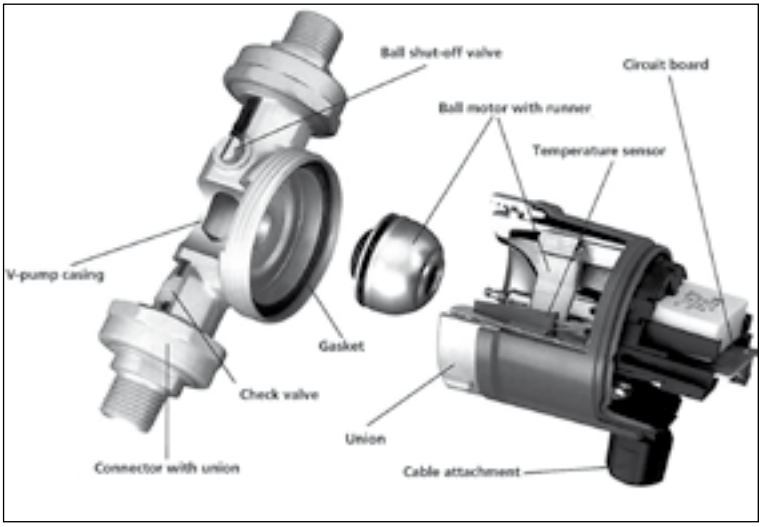
Own Notes

Vortex Domestic Water Pumps

In order for hot water to be imwithiately available when turning on the hot water, a circulation pump for domestic water is built into the hot water line.

Energy savings and convenience are the top priority when using Vortex domestic water pumps. The pumps include an extensive range of accessories consisting of thermostat and timer functions to ensure that the pumps only run when needed.

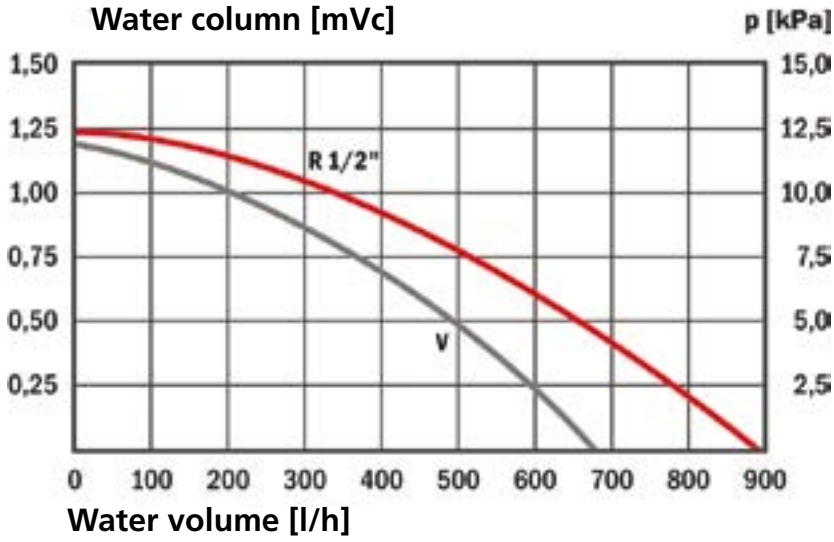
Read more and download a data sheet at www.roth-nordic.dk

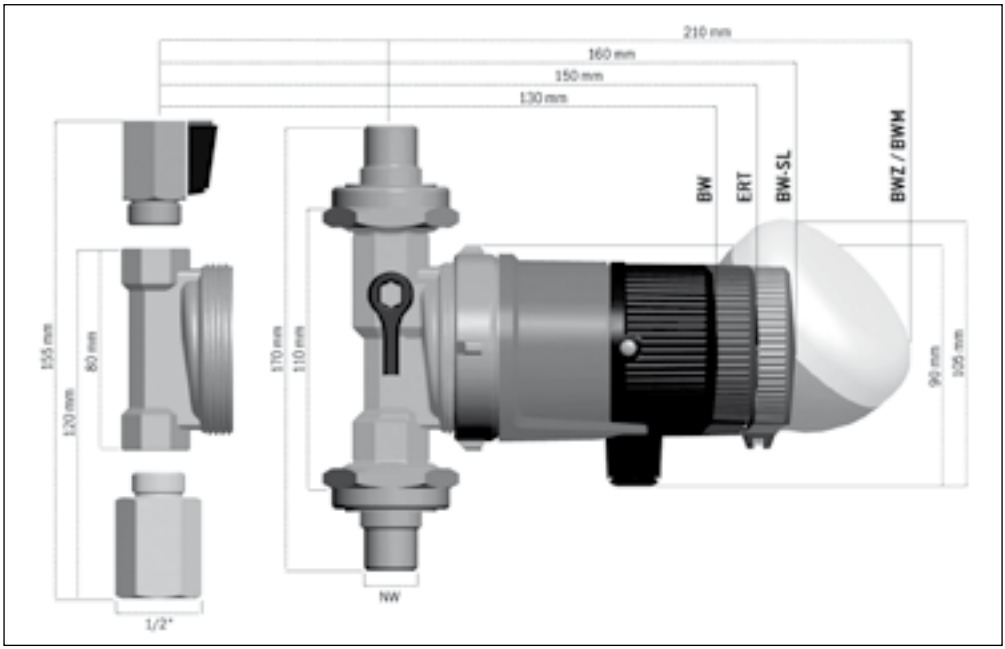


Vortex Domestic Water Pumps

Technical specifications

Vortex domestic water pumps are built for operation in tap water circulation systems. The pumps are not self-priming. All artificial material that gets in contact with water is KTW compliant.





Roth Nordic:
Addresses and phone numbers

DENMARK
Roth Nordic A/S – Centervej 5 – DK 3600 Frederikssund
Phone. +45 47 38 01 21 – Fax +45 47 38 02 42
E-mail: service@roth-nordic.dk

NORWAY
Roth Nordic AS – Postboks 20 – N- 1306 Bærum Postterminal
Visiting address: Jongsåsveien 4, N- 1338 Sandvika
Telefon +47 67 57 54 00 – Fax +47 67 57 54 09
E-mail: service@roth-nordic.no

SWEDEN
Roth Nordic AB – Hanögatan 9 – SE-211 24 Malmö
Tel. +46 40 53 40 90 – Fax +46 40 53 40 99
E-mail: service@roth-nordic.se

FINLAND
Roth Nordic Oy – Kauppiaankatu 11, 10300 Karjaa
Phone. +358 400 344572 – Fax. +358 019 233 193
E-mail: service@roth-finland.com

ICELAND
Roth Nordic A/S – Centervej 5 – DK 3600 Frederikssund
Phone. +45 47 38 01 21 – Fax +45 47 38 02 42
E-mail: per.kronil@roth-nordic.dk

Own Notes

Own Notes

Own Notes

Own Notes

Own Notes

Own Notes

Roth Nordic A/S
Centervej 5 • DK 3600 Frederikssund
Phone. +45 4738 0121 • Fax +45 4738 0242
roth-nordic.com • E-mail: service@roth-nordic.dk